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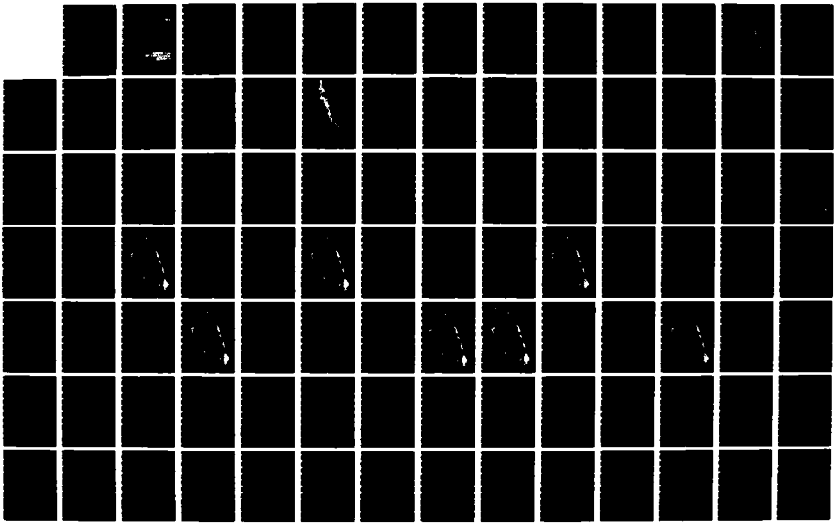

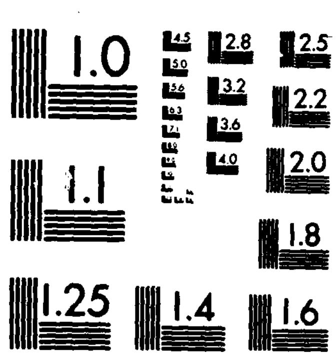

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INTERPRETIVE OVERVIEW
OF CULTURAL RESOURCES IN
SAYLORVILLE LAKE, IOWA

Volume I
Project: CAR-627

CENTER FOR
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RESEARCH

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INTERPRETIVE OVERVIEW
OF CULTURAL RESOURCES IN
SAYLORVILLE LAKE, IOWA

Volume I
Project: CAR-627

prepared by

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A literature search and interpretive document
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by the

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Southwest Missouri State University
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INTERPRETIVE OVERVIEW OF CULTURAL RESOURCES IN SAYLORVILLE LAKE, IOWA

ABSTRACT

This document is an interpretive cultural overview. This means that not only is all the known information about Saylorville Lake cultural resources summarized but the salient aspects of prehistory and history are analyzed and interpreted. The overview has two goals: to review and critique previous cultural studies in the project area; and to present what is known about prehistory, history, architecture, ecology and other human relationships in the study area. The overview begins with reviews of the geological sequence, soils, climate and ecology of the Saylorville Lake area. Emphasis is placed on natural factors that affect(ed) human activities, and special attention is given to the reconstruction of landforms—the basis for cultural and site evaluations. In the next section the four dozen cultural (archaeological) investigations in the project area are reviewed in an annotated discussion. Here, the chronological relationships of past investigations are emphasized to show how cultural information has accumulated to the point where an overview is needed. Following this the overviews of prehistoric and historic cultural resources are presented. Benn's overview of the prehistoric culture periods stresses chronology, synthesis of the artifact types with settlement patterns and ecology, and perceived biases in the data base. Rogers' overview of the historic culture periods focuses on the current state of artifact collections and analyses, and on the potential avenues of research in the written and oral records. The last section of text evaluates the current site information—inherent biases, past and future site impacts, distributions and densities of sites on landforms. This and the cultural overview information is employed to create a list of research questions and evaluations of Study Units in the Resource Protection and Planning Process. Much of the hard data and sources for future research are detailed in the appendices. Appendix A is the hafted biface typology for the project area and central Iowa. Appendix B is the ceramic typology for the same areas. Appendix D has typical soil descriptions for the project area. Appendix E contains all of the chemical dates from archaeological investigations. Appendix F is a annotated listing of historical sources and references.

David W. Benn
Principal Investigator

INTRODUCTION

The last overview of cultural history in the Saylorville Lake area was published more than 10 years ago (Gradwohl 1974). Some of the lake property had been surveyed by that time, and a few sites had been excavated (Gradwohl 1975). Information from the Red Rock Reservoir downstream from Saylorville was included in Gradwohl's 1974 summary to bolster his interpretations of the cultural situation. In the decade since 1974 the first overview has been buried beneath more than a dozen archaeological reports of site surveys, testing and excavations. Moreover, Saylorville Lake has been operated since 1977 and is actively destroying cultural resources. Now is an appropriate time for a second cultural overview.

This document is intended to fulfill part of a contract (number DACW25-84-C-0035) between the Rock Island District, Corps of Engineers (COE; managers of Saylorville Lake) and the Center for Archaeological Research (CAR), Southwest Missouri State University. The overall goals of the overview (see Appendix C) are:

a) To set forth what is known about the prehistory, history and pertinent architectural history, ethnography, geology, ecology and other factors relevant to the study area and its environs.

b) To describe and evaluate the quality of the studies and other data sources upon which knowledge of the area's history, prehistory and other pertinent characteristics is based.

The Overview was composed in conjunction with two other parts of contract DACW25-84-C-0035. The second volume is the Management Plan, which includes: a) an array of pertinent research questions for directing future cultural resource investigations in Saylorville Lake; b) an allocation of all known Saylorville Lake sites into categories of protection or removal from further management decisions; c) criteria for administering the management plan. The other part, volume III, of the contract is problem-oriented testing of the research questions. The scope-of-work for the entire contract is reproduced in Appendix C.

The Overview/Management Plan/Testing contract has been accomplished concurrently with two other relevant projects in Saylorville Lake. In August and September of 1984 the CAR conducted survey and testing investigations on 36 archaeological sites in Saylorville recreation areas (Stanley and Benn 1985). This work, directed by the writer, was done to insure that no significant cultural resources were being adversely affected by COE operations. Site testing in recreation areas also offered an opportunity to begin data collection to formulate the allocation design in the Management Plan. The other concurrent project in Saylorville Lake was begun in September, 1984 by the Iowa Geological Survey. E. A. Bettis and B. Hoyer directed the IGS project for the purpose of formulating a model of the geological history of the central Des Moines River valley. Bettis and the

writer collaborated on the essential parts of the landscape model, which is used in this document and in the IGS report.

The body of this document is divided into six parts. First after the introduction, the Saylorville project area is described by its geography, geological history, soils and ecology. In the second section all of the previous archaeological/cultural investigations from the area are reviewed and evaluated. ~~Thirdly~~, current needs for archaeological investigation are assessed. Following this the prehistoric cultural material and periods are described and analyzed. Then, the historic cultural materials and periods are discussed and evaluated. In the ~~sixth~~ and last section the current site information is analyzed to determine biases in our knowledge of the project area, and a list of needs for site management and cultural research are outlined. Six appendices are attached to the report: A-pointed/hafted biface (projectile point) typology; B-ceramic typology; C-Memorandum of Agreement, contract specifications, scope-of-work and correspondence; D-pertinent soil profiles; E-laboratory dates; F-annotated bibliography and source listing for historic documents.

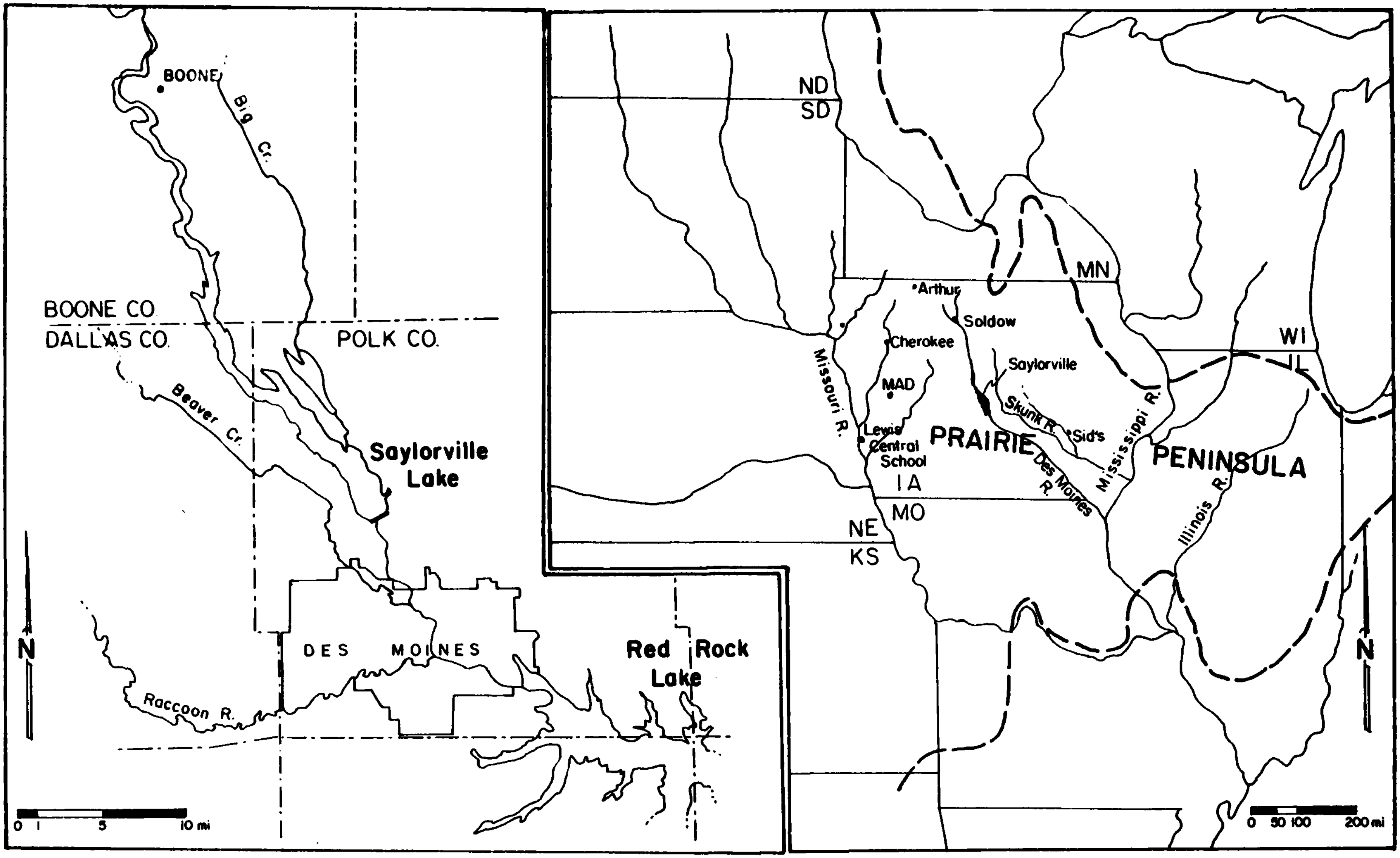


Figure 1: Saylorville Project area on the Prairie Peninsula.

I
PROJECT AREA

Saylorville Lake was created by impounding the waters of the Des Moines River approximately five miles above the City of Des Moines, Iowa (Figure 1). This location is about half way up the course of the Des Moines River, i.e. 214 river miles (357km) from the confluence with the Mississippi River. The continental position of the project area is in the center of the western half of the Prairie Peninsula approximately 130 miles (217km) east of the Missouri River. The Des Moines River extends another 146 miles (243km) above the Saylorville Dam and courses through a 5,823 square mile watershed above the dam.

Saylorville Dam originally was authorized for flood control (1958 Flood Control Act) and was completed in 1975. Saylorville project fee taking lands encompass 25,515 acres (10,308ha), the majority of which are leased for recreational purposes to the Iowa Conservation Commission and other state and local agencies. The permanent conservation pool (838ft, 255m ASL) extends approximately 35 (58km) miles upstream, while the maximum flood pool (890ft, 271m ASL) is 54 (90km) miles long.

Geology

The City of Des Moines is built on the end (Bemis) moraine of the lobe of the most southward Wisconsinan ice advance that occured at the end of the Pleistocene period (ca. 14,000 B.P.; see Ruhe 1969). Thus, the project area is situated within the Des Moines Lobe region of Iowa (Prior 1976). The Des Moines Lobe is a region of little relief except for the incised Des Moines River valley and its tributaries. The till plain outside the valley has a "rumpled" surface (Ibid.) of shallow lakes, youthful drainages, low knobs and concentric ridges, all being the remains of former glacial ice fronts and sub-ice features.

The reach of the Des Moines River on the Des Moines Lobe was downcut very rapidly as the Late Wisconsinan ice melted (ca. 14,000-13,000 B.P.). In the project area (Figure 2) much of the downcutting was through Pennsylvanian bedrock of shale, coal, sandstone and limestone, leaving the present day valley constricted within reaches that are straight and narrow (.25mi, .41km) or others that are wide and meandering (1.5-2mi, 2.5-3.3km). As the glacial ice retreated into and beyond Minnesota, periodic episodes of high meltwater cut a series of benches along the sides of the valley and in the glacial tills within the valley. Outwash floods also deposited huge amounts of boulders, gravel and sand as terraces (TW) on the floodplain (see Benn and Bettis 1981:10-11). Much loose sand and silt was swept by winds out of the valley and onto the benches and upland till plain that bordered the valley on the east. Some areas east of Big Creek received enough blow sand that large dunes were formed as far east as Ankeny (3mi, 5km). Quantities of silt also were carried by winds from valleys (e.g. Beaver Creek) west of the Des Moines, and this silt was deposited as loess on the uplands. The heavy, post-glacial

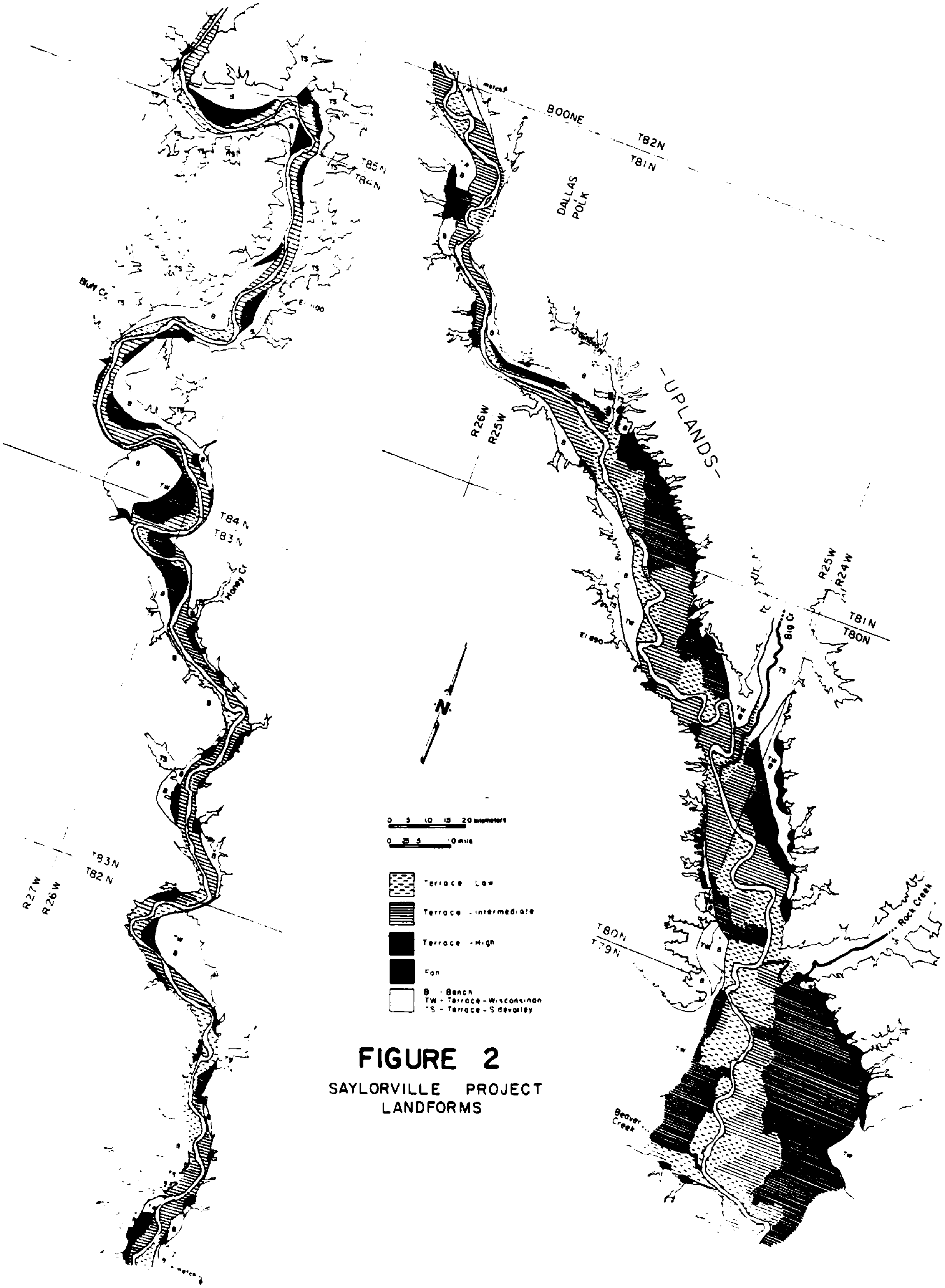


FIGURE 2

SAYLORVILLE PROJECT
LANDFORMS

fluvial activity probably abated by ca. 11,000 B.P. (Ibid.; Kemmis, Hallberg and Luteneggar 1981). Episodes of lower-intensity aggrading and degrading of sediments on the valley floor followed the late Wisconsinan period and continue to the present time (i.e. the Holocene period).

Five major landforms dominated the central Des Moines valley of the Holocene period (Benn and Bettis 1981; Bettis, personal communication 1984). Throughout the Holocene colluvial sediments have been accumulating at the base of scarps and steep backslopes. Colluvial slopes tend to be narrow landforms of mixed composition and often comprise the transition zone between other major landforms. Beginning ca. 8500 B.P. alluvial Fans started to form at the mouths of small sidevalleys because of concurrent headward erosion in those valleys. Rapid alluviation of Fans continued between ca. 7000 and 4000 B.P., building huge piles of stratified sediments across the valley as far as the contemporary meander belt of the river would allow. Fan deposition was episodic, according to the evidence of superimposed buried soils and associated fining-upward sediment sequences within most Fans. Alluviation of the Fans slowed considerably or stopped within the last 2000 years. The High Terrace (TH) began to aggrade on the valley floor after ca. 11,000 B.P. and concurrently with alluvial Fan formation. The fine sandy loam and silty loam sediments of this terrace were eroded from uplands and sidevalleys, expecially during the drier Hypsithermal period (ca. 8000-5000 B.P.; Bartlein, Webb and Fleri 1984:71), and were dumped by the river into a massive terrace. High terrace sediments are oxidized and therefore preserve little obvious stratigraphy today, nor do their relatively featureless surfaces retain the evidence of former river meanders. Some reaches of the Des Moines River may have been a braided stream during the TH alluvial episode.

The TH terrace probably covered the valley by 4000 B.P. when a period of downcutting commenced. The Des Moines River had its present configuration as a meandering stream at this time. The river assumed a meander belt within the valley floor and migrated within this belt to form a series of Intermediate Terraces (TI). TI terraces were formed by horizontal, then vertical accretion until ca. 500 B.P. Today, the preservation of a sequence of TI terraces depends on the width of the valley in a particular reach. For instance, reaches of narrow valley in Boone County contain few TH or TI terraces, while reaches of wider valley in Polk County preserve the TH and TI1-4 terrace sequence. Many Fans also were downcut or completely destroyed during TI terrace formation. The most recent 500 years have seen a continuation of downcutting followed by terrace aggradation, and the Low Terrace (TL) is the present day product of this activity.

Soils

Soil associations in the project area reflect some of the radical changes of past geological events. However, soils are the products of relatively recent weathering. They can be used to determine current conditions that affect archaeological preservation, but soil associations cannot be extrapolated far into the past.

The typical soil associations for the project area (McCracken 1960; Andrews and Dideriksen 1981; Dideriksen 1983) are divided best between Boone and Polk Counties, i.e. upper and lower reservoir respectively. In Boone

County the uplands are dominated by the Hayden-Storden soil association and to a lesser extent by the Hayden-Lester-Luther association (see Appendix D for typical soil profiles). The Hayden-Storden association are well drained loamy soils on steep uplands. This group usually occurs in and around the steep ravines and sideslopes that discect the valley walls in Boone County. These soils supported forest vegetation. The less common Hayden-Lester-Luther association are well drained to poorly drainged soils on level to sloping surfaces. These soils occur on the crests of ridges and the rolling uplands overlooking the valley. They formed in loess over till or simply till and supported forest vegetation. In Polk County the Hayden-Lester association dominates the upland. Here, the COE fee taking boundary extends farther into the gently rolling upland (till plain) than it does in Boone County. Therefore, the more level upland soils formed in till under a prairie or savannah vegetation, while the on the wooded ridge spurs the soil parent material consists of loess or blow sand over till.

For the most part all of the upland soils tend to be older and more leached than bottomland soils. Upland soils provide a poor context for preservation of all but the hardest of archaeological evidence (i.e. stone). This is not so for bottom soils. Soils on the valley floor tend to be young and have superimposed surfaces with older (buried) soils. In these contexts archaeological evidence is much better preserved. The dominant bottomland soil association in Boone County is the Buckney-Moingona-Sattre. These are nearly level to moderately sloping, excessively to moderately well drained loamy soils that supported mixed forest and prairie/meadow vegetation. Buckney soils are found on terraces, Moingona soils on footslopes and Sattre soils on (till) benches and high terraces. In Polk County the Colo-Waukegan-Dickinson-Dorchester association has similar characteristics, although some soils have more sand and gravel in their substrata. Dickinson soils are located on sideslopes, Colo soils on older (prairie covered) terraces, and Dorchester and Waukegan soils are found on low, youthful terraces.

Recent survey experience in the Saylorville project has revealed to the writer that the soil survey maps are not especially helpful for diagnosing particular soils at specific locations in the bottomlands. In part this is due to the nature of all soil surveys; they generalize data in rendering the distributions of soil types onto maps. In the valley the generalized soil maps ignore most fluvial features in the landscape. Meanders, subtle terrace levels and radical shifts in sources of parent material are not incorporated in soil maps.

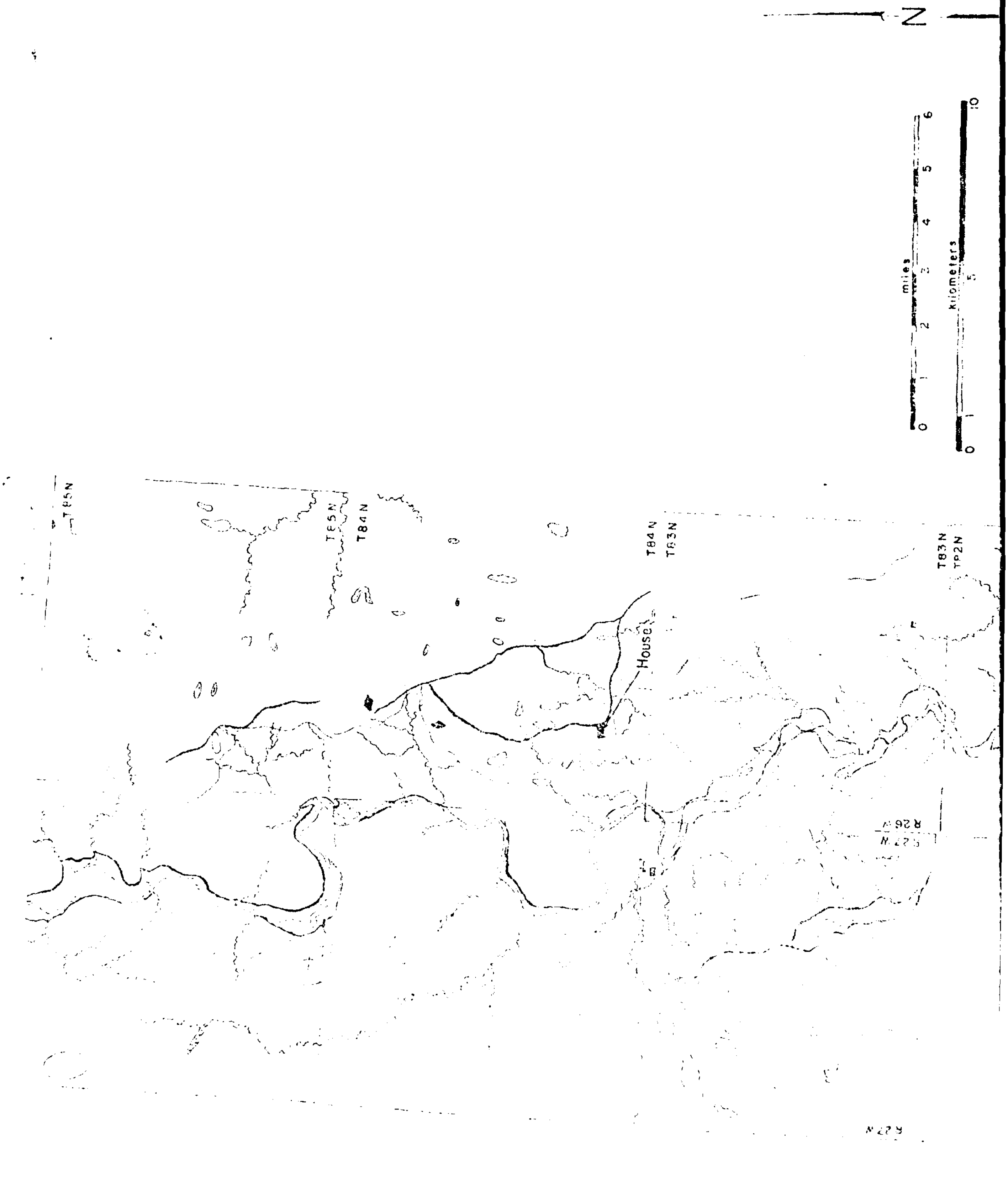
Ecological Resources

Vegetation in the central Des Moines valley obviously has changed as the geological composition of the valley evolved. As the glacial ice retreated after ca. 14,000 B.P. the conifer-hardwood forest moved north and covered the project area and surrounding uplands (Walker 1966). Since the lower elevations in the valley were subject to massive floods of meltwater, vegetation communities within the valley must have been limited to immature forest and stands of pioneer herbs, forbs and willows. After meltwater flows ebbed and the prevailing westerly winds began to dry the landscape ca. 10,500-6000 B.P., the Prairie Peninsula expanded eastward across Iowa (Bryson

Baerreis and Wendland 1970; Wright 1968; Van Zant 1979). Little is known about the Des Moines valley vegetation during the Hypsithermal period (a recently analyzed pollen core shows the duration of the Hypsithermal from ca. 8500-4500 B.P.; see Bettis and Hoyer 1985). It is possible that the closed deciduous forest of earlier periods retreated to protected north and east facing slopes while parkland and prairie dominated broad terraces, sunny slopes and the upland till plain. The river channel associated with the High terrace during the mid-Holocene has not been studied, but vegetation in and around this channel could have consisted of willows and other pioneer plants in dense stands along the channel banks and a mesic forest (e.g. maple, elm, hackberry, etc.) on the intervening ridge-and-swale topography. By the late Holocene (ca. 4000 B.P.) the river began to downcut, isolating the well drained TH terrace and creating mesic TI terraces. Large expanses of TH terrace supported prairie and interspersed groves of oak-hickory forest, while the meanderbelt was dominated by mesic forest and pioneer river bank communities. The valley walls and sidevalleys were covered by hardwood forest, and the uplands were dominated by prairie.

Vegetation patterns described during the first land survey (Figure 3; Secretary of the State of Iowa 1847) present a reasonably good record of the last 4000 years. A mesic forest of cottonwood, maple, willow, elm, ash, sugartree, hawthorn and hickory covered the floodplain between oxbow channels. The forest of the higher terraces and sideslopes consisted of oaks, hickory, linden, ironwood, ash, coffeenut, black walnut, hazelnut and sugartree. Meadows and prairies were dominated by tall grasses like big bluestem, although more zeric grasses were found on drier upland ridges. The rich forest and prairie habitats supported huge populations of mammals, birds and fish on which aboriginals and early settlers depended. Bison, elk and prairie chicken of the prairies and white-tailed deer, turkey, grouse, raccoons and passenger pigeons of the forests provided staple food supplies, at least until many species were extirpated during the nineteenth century. Along the river animals like beaver, otter, muskrat, turtles and water birds were extremely common, and fish and freshwater mussels were easily obtained from the river and its backwaters. The shifting river banks and bars yielded crops of seeds from wild annuals, and the forests periodically produced huge masts of nuts.

These ecological communities disappeared rapidly as Euro-american settlers entered the central Des Moines valley after 1830. The 1847 land survey maps show the valley, its blufftops and tributary valleys as being forest covered (Figure 3). In a few places the band of forest that followed the valley was as little as a mile wide, but in most reaches of the river the forest was 3-6 miles wide with longer extensions into the upland prairie. Few patches of bottomland prairie, like the one that covered the TH terrace in the Downstream Corridor, were depicted on the earliest map. In contrast the 1904 atlas map (Figure 4) records the forest in Polk County as being a patchwork of timber with the only contiguous forest being situated on the lowest terraces in the meanderbelt of the river. The same was true for Dallas County. Only the Boone County stands of forest retained something close to their native distribution, except for greatly reduced forest cover in the vicinity of the town of Boone. These generalizations from maps are merely broad quantifications of the reduction in forest cover largely due to clearing for agricultural fields and human settlements and industry. In terms of quality the forests were more substantially reduced by harvesting of log-sized trees for commercial purposes. Often entire stands of trees were wasted to obtain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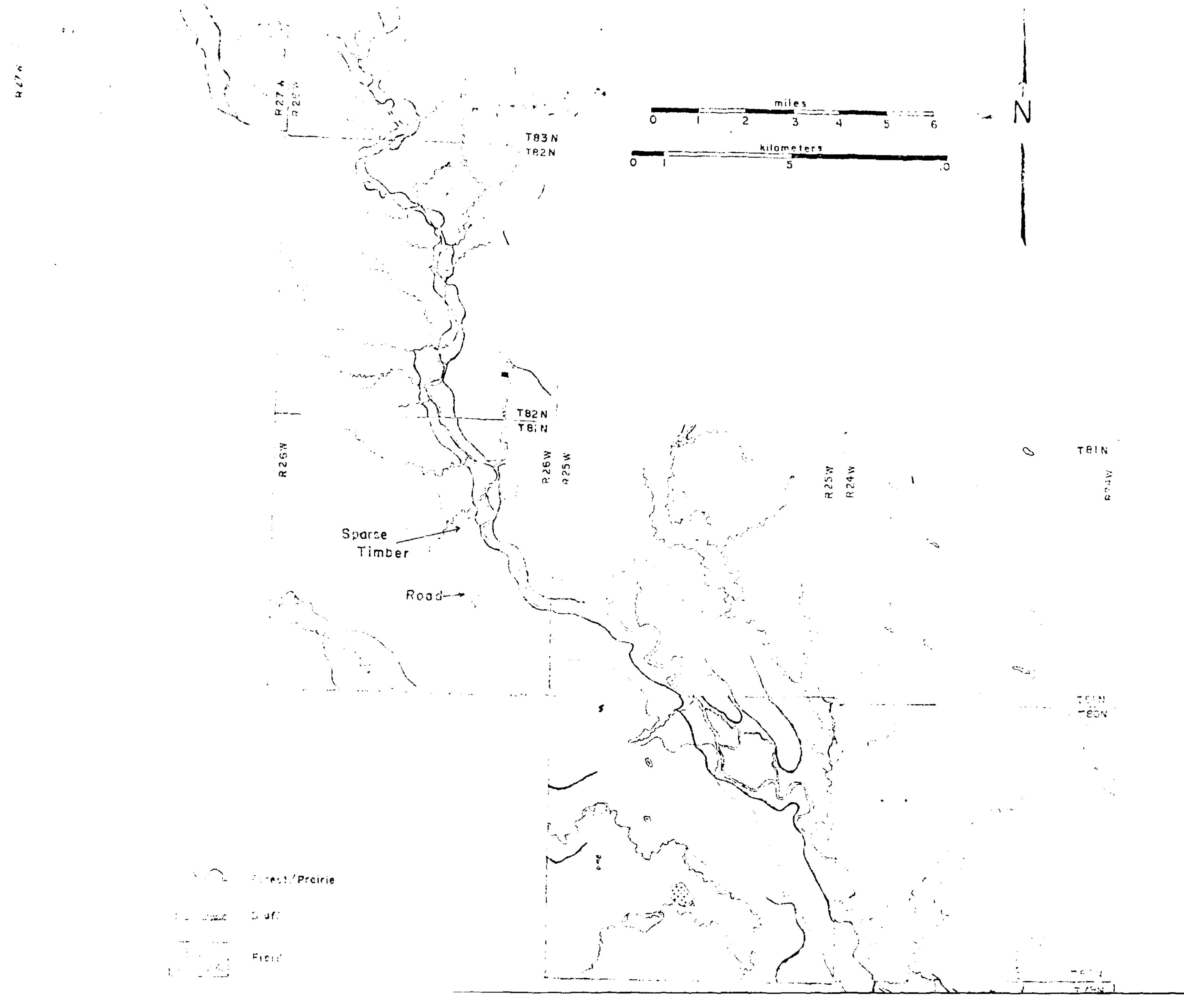
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Road
Forest/Prairie
Field

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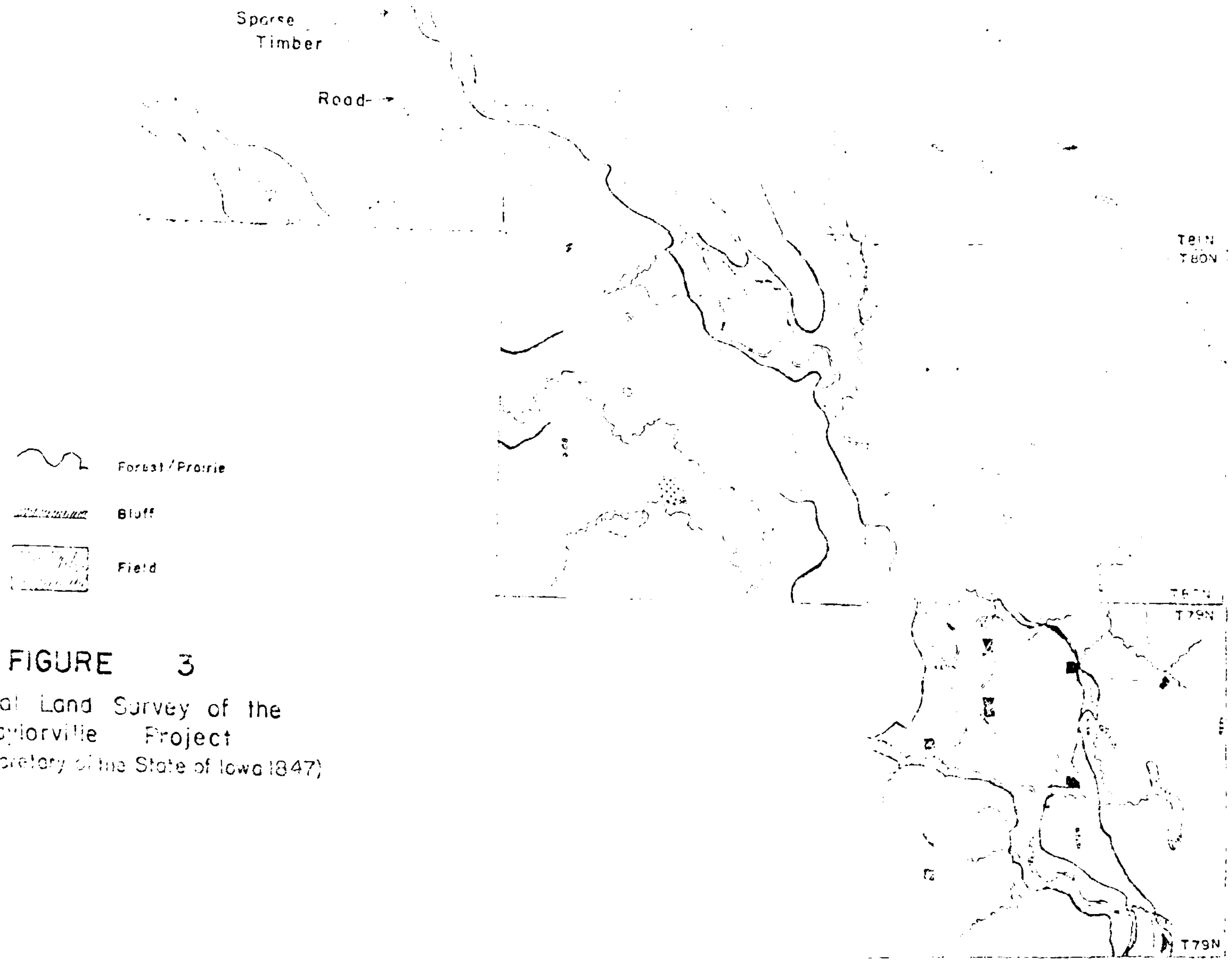

FIGURE 3

Original Land Survey of the Saylorville Project
(after Secretary of the State of Iowa 1847)

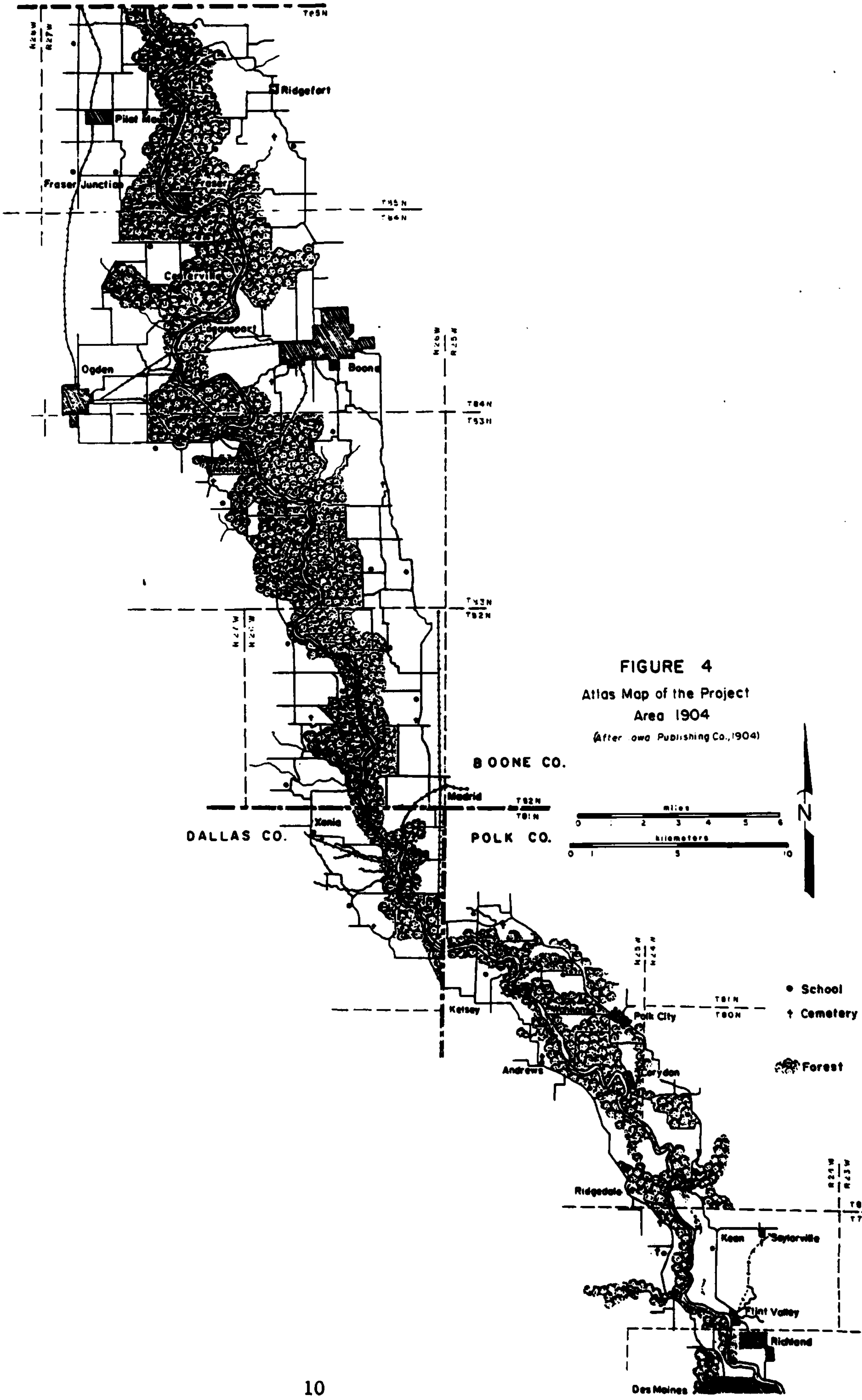

FIGURE 4
Atlas Map of the Project Area 1904
(After Iowa Publishing Co., 1904)

large logs of preferred species. By the 1970s the only areas were forest cover had not been removed and the area tilled were the TL terraces, sideslopes and narrow upland ridge spurs.

The modern Des Moines region has a temperate climate of cold winters and warm, wet summers. The mean summer temperature (mid-May through late September) is 69 degrees F, but extreme temperatures of 100 degrees or more are common in August. The temperature average for December through February is 22 degrees F with extremes of -20 to -30 degrees F. The yearly average for precipitation is 31 inches. More than half of the precipitation falls as rain between May and August. The average for winter snowfall is about 34 inches with a heavy snowfall and/or blizzard being almost an annual occurrence. Wind velocity averages about 11mph, although in the pre-development period winds would have been reduced in the forested valley.

The filling of Saylorville Lake in 1977 is the most recent impact in the project area. This impact is creating the most substantial changes in the project area since the end of the late Wisconsinan period. During the construction phase much of the government land was fallowed. The forests below 850ft elevation were grubbed out, and selective cutting of trees was done up to the 870ft elevation. Landscapes around the dam were borrowed for fill, and large recreational facilities were constructed on the uplands and along the beach in Polk County. The permanent lake is destroying landforms around the 836-840ft elevation, while the flood pool can affect landforms up to the 890ft elevation (see MANAGEMENT PLAN for details of inundation effects).

II
PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

The bibliography of professional archaeological work in the Saylorville project numbers approximately 4 dozen citations. The works range from masters theses to published articles, contract reports and to government documents and internal reports. Student papers from Iowa State University are not considered herein. The bibliography is described and evaluated in the following pages, but the discussion is not organized by authorship. Rather, the material is arranged in chronological periods so that the progression of archaeological research in the Saylorville project can be appreciated. The history of this research has never been discussed comprehensively, although summaries have appeared in most of the ISU reports.

The first investigations of archaeological topics occurred in the late nineteenth and early twentieth centuries. Local residents sometimes opened earthen mounds on their property, and their findings were passed to the public through popularly written articles in local newspapers. The articles rarely specify the exact mound locations or their contents. Intellectuals of the new, leisure middle class and bourgeoisie of the towns and cities also took an interest in Indian mounds and artifacts and occasionally participated in digging. Their articles were published as scholarly descriptions in the "proceedings" of the scientific societies typical of that period (Willey and Sabloff 1974:42).

The most spectacular exploration of turn-of-the-century archaeology was digging the Boone Mound in 1908. This mound (13BN029) was a 100ft diameter edifice on a Des Moines River terrace west of Boone, Iowa. The principal excavator was Thompson Van Hyning of the Des Moines Museum (now State Historical Museum). He was assisted by K. C. Kastberg, then City Engineer of Boone, and C. F. Henning among others. The results of the excavation were never thoroughly analyzed and published (see Gradwohl 1975:218), but Boone Mound artifacts are stored in the State Historical Museum in Des Moines and the following written material is available.

"The Boone Mound" by T. Van Hyning (1910a,b). These articles present a terse description of the excavation of the mound fill. He includes some detailed description of the sub-mound mortuary structures and many speculations about the culture of ancient peoples.

Unpublished Diary of Boone Mound Excavation by C. F. Henning.

"Boone Mound Exploration" by Edgar R. Harlan (1908). This summary contains more details about the sub-mound morturary structures than Van Hyning's papers.

"Osteological Analysis of the Boone Mound Assemblage" by Thomas Dean Holland (n.d.a). This is a paper in the Office of Historic Preservation (Des Moines) files. Holland describes features on the bones (skulls) of five individuals from the Boone Mound. Two skulls showed evidence of cradle board deformation.

File of Newspaper Clippings and the Van Hyning Paper; compiled by Bill Johnson (Historical Museum, Des Moines).

No scientific archaeological work was pursued in the Saylorville project until the 1960s, when the initial phases of planning and construction for the reservoir were begun. Then State Archaeologist, Marshall McKusick, sent Michael Ashworth to the area in 1962 to determine if archaeological sites were present. Ashworth's reconnaissance depended heavily on local collectors to point out site locations. In 1966 a two man crew from the Inter-Agency Archeological Salvage Program returned to the reservoir to revisit known sites and to assess their probability of being affected by reservoir construction and flooding. This work was reported by Lionel Brown.

"Archeological Resources of Saylorville Reservoir Drainage, Iowa" by Ashworth and McKusick (1964). A reconnaissance survey funded by the National Park Service located 61 sites. The site information is very terse, and McKusick spuriously reports the presence of several historic Fox sites. Site collections obtained by this survey may be lost, as the repository at the Office of the State Archaeologist contains only three sites Saylorville sites (13PK010, 13DA007, 13BN047).

"An Appraisal of the Archeological Resources of the Saylorville Reservoir, Dallas, Boone and Polk Counties, Iowa" by Lionel A. Brown (1966). Brown provides more description about the project area and the 66 sites his team investigated. The survey was conducted in July when vegetation obscured the surfaces of most sites; therefore few artifacts were found. Brown presents recommendations ("outside reservoir," "testing," "re-examination") for each site.

In 1967 the responsibility for archaeological work in the Saylorville project was assumed by personnel of the Archaeological Laboratory, Iowa State University (ISU, Ames, Iowa). David M. Gradwohl was the principal investigator, and Nancy M. Osborn was the principal associate and co-author for many of the investigations. For the next 14 years Gradwohl would conduct Saylorville archaeology through a complex array of ISU fieldschools, weekend volunteer projects and contracts with the National Park Service (NPS), Office of Historic Preservation (OHP) and the Corps of Engineers (COE). The ISU investigations ranged from comprehensive survey of COE land and ancillary property affected by the project, to testing of dozens of sites and eventually to data recovery of significant sites.

For years 1967-1970 the archaeological work was funded by the National Park Service (4 contracts). Iowa State University also contributed staff time and facilities that amounted to a total 60% larger than the NPS funding (all funds amounting to less than $100,000). ISU crews did limited surveys in Boone County, often following tips on sites found by amateur collectors. The bulk of the funding was applied to testing and extensive excavation of 12 sites (most in Boone County); some of the sites were recommended for work by Brown (1966) and others were located by ISU crews. Another 7 sites also were reconnoitered. This work was reported in 1975.

"Final Report on the Investigation of Archaeological Sites in Saylorville Reservoir, Iowa, as Covered in Four Contracts between the National Park Service and Iowa State University" by David M. Gradwohl (1975). The report

includes an extended discussion of the historic Elk Rapids locality. Important sites like Meehan-Schell (13BN110, Great Oasis) and Noah Creek Kiln (13BN111) are reported. Mead's (1974) seed analysis for Meehan-Schell also is printed.

Abstracts and a summary pertaining to the early phase of Saylorville work also were published. The most significant paper is Gradwohl's (1974) summary of archaeology in the Red Rock and Saylorville Reservoirs. The author discusses prehistoric and historic culture periods with evidence from surface collections and excavations. Although no evidence was yet available for Paleo-Indian and Archaic periods, the Middle Woodland period is covered in detail with discussion of Havana-like pottery types, radiocarbon dates and mounds. The bulk of Gradwohl's paper is given to an analysis of the Moingona (Oneota) phase and Great Oasis manifestations, the former being centered in the Red Rock vicinity and the latter in Saylorville. This is followed by equally extensive coverage of ethnohistoric and historic sites, particularly pottery kilns of the historic period. The cultural interpretations in this paper formed the basis for all subsequent cultural summaries in later ISU reports of Saylorville material.

"Salvage Archaeology during 1967 in the Saylorville Reservoir, Iowa," by David M. Gradwohl (1969a).

"Salvage Archaeology in Saylorville Reservoir, Iowa, 1968," by David M. Gradwohl (1969b).

"Excavations at 13BN8 and 13BN12 in the Saylorville Reservoir," by John D. Reynolds (1969).

"Archaeology of the Central Des Moines River Valley: a Preliminary Summary," by David M. Gradwohl (1974). This work includes background of the natural environment, previous investigations, history of site investigations and a discussion of culture periods.

By 1973 the 1966 Historic Preservation Act and Executive Order 11593 had been implemented, and the Office of Historic Preservation (OHP) was in place in Iowa City. Since the Saylorville Reservoir had not been intensively surveyed for cultural resources, the OHP undertook a cooperative agreement with ISU to survey a portion of the reservoir (reconnaissance units 1,3). This contract was followed in 1973 and 1974 by three contracts between the COE and ISU to survey the remainder of the reservoir. Funding for the surveys totaled less than $100,000 of which the COE provided about 63%, ISU 26% and OHP almost 11%. The proposed route of a natural gas pipeline through Saylorville also was surveyed.

"Preliminary Archaeological Survey and Recommendations for Proposed Northern Natural Gas Pipeline across the Saylorville Reservoir, Iowa," by David M. Gradwohl (1973).

"Site Seeking in Saylorville," by David M. Gradwohl and Nancy M. Osborn (1973a). Includes survey on the right bank of the river south of Polk City (reconnaissance units 1,3). Also included are a short cultural summary, listing of impacted sites and recommendations for additional survey, testing and salvage of impacted sites.

"A Roster of Reported Archaeological sites in Saylorville Reservoir, Iowa," by David M. Gradwohl and Nancy M. Osborn (1973b). This report was intended to fulfill a COE request for a complete listing of Saylorville project sites. A total of 171 sites is listed and sorted according to types of project impacts. Sites are recommended for additional survey, testing and data recovery ("salvage"). Recommendations are presented for overall coordination of Saylorville archaeological work: 1) need for comprehensive site survey, 2) site testing and excavation take place before 1977, 3) need for on-going monitoring of site impacts, 4) need for stronger site preservation and interpretive program.

"More Site Seeking in Saylorville," by David M. Gradwohl and Nancy M. Osborn (1974). Covers survey of the left bank south of Polk City (reconnaissance unit 2) and the Big Creek sub-impoundment (reconnaissance unit 4). Also included are a cultural summary, a complete list of site impacts, recommendations site testing and excavation, and procedures for future archaeological work.

"Still More Site Seeking in Saylorville," by David M. Gradwohl and Nancy M. Osborn (1975a). Covers survey of both sides of the river between Polk City and the Dallas/Boone County line (reconnaissance units 5-11 and 20). Also included are a cultural summary, a listing of site impacts and recommendations, and procedures for future archaeological work.

"Continued Site Seeking in Saylorville," by David M. Gradwohl and Nancy M. Osborn (1976). Covers survey of both sides of the river for the entire project are in Boone County (reconnaissance units 12-19). Also included are a cultural summary, a listing of site impacts and recommendations, and procedures for future archaeological work.

During the period when extensive surveys were being done in the Saylorville reservoir the floodplain below the dam was added to the COE project. This area is the Downstream Corridor, and it extends into the City of Des Moines. Two reconnaissance surveys were done on this property in 1975. The first located only two sites because the survey was done when the river was at flood stage and covered all terraces except the TH. The second focused on floodplain in the City of Des Moines, including Euclid Park, but no sites were found.

"The Des Moines River Greenbelt Corridor Recreation Project: an Assessment of Archaeological Resources," by Michael S. Weichman, Nancy Osborn and Marc Mills (1975).

"The Des Moines Riverfront Recreation Project, Des Moines, Iowa: an Assessment and Inventory of Archaeological Resources," by Michael S. Weichman (1975).

Several manuscripts analyzing specific sites resulted from the 1967-75 phase of work in Saylorville. All but one of these are unpublished. Support for these projects came from NPS contracts and ISU teaching and research facilities.

"The Nineteenth Century Ceramic Industry at Coal Valley: Archaeology of 13BN111 (Noah Creek Kiln)," by Barbara Schulte (1974). This masters thesis is discussed in the Chapter IV on historic resources.

"A Report of Test Excavations Conducted at 13PK127, an Archaeological Site within Big Creek State Park," by Robert D. Timberlake (n.d.). This site would have been impacted by Big Creek Lake. Little diagnostic material was recovered.

"The Stoneware Industry at Moingona, Iowa: an Archaeological and Historical Study of Moingona Pottery Works (13BN120) and Flint Stone Pottery (13BN132)," by Allen Schroeder (1979). This masters thesis is discussed in the Chapter IV on historic resources.

"Seed Analysis of the Meehan-Schell Site (13BN110), a Great Oasis Site in Central Iowa," by Barbara E. Mead (1974, 1981). This masters thesis identifies maize, sunflower and other wild seeds from the "type" Great Oasis site in the Des Moines valley.

By 1974 the information for Saylorville reservoir had accumulated to the point where certain properties were considered by permanent preservation on the National Register of Historic Places. Gradwohl (1975:63) suggested this for four locations: Saylorville Five mound group (13PK144), the Hubby site (13BN38), the Coal Valley locality (13BN110, -111, -121, -127, -240), and the Boone mound (13BN29) and Gracie Paulson village (13BN30). The major survey reports (i.e. the "Site Seeking..." series) also suggested sites for permanent preservation status. Rather than this piecemeal approach to site nomination, the Saylorville Archaeological District, including all sites within COE property, was declared eligible for nomination to the National Register on 19 June 1975 (but actually ratified 26 May 1976). Later, a nomination for the McCall House (13BN240), the only extant nineteenth century, brick house on COE land, was prepared by Nancy Osborn. The property was not considered eligible for the National Register by the Office of Historic Preservation and the COE planning staff. The house has been torn down.

The Memorandum of Agreement for the Saylorville Archaeological District (Appendix C) was signed in January and May of 1976 and amended in the spring of 1978. It stipulates that all COE property be surveyed for archaeological resources. It states further that significant sites below the 860ft elevation or in development zones outside the permanent pool shall be excavated if threatened by adverse impacts. Provisions are made for monitoring of construction zones and for publication of the results of archaeclogical work. Furthermore, it is stipulated that project impacts on sites within the flood pool (below 890ft) will be evaluated at 3-5 year intervals and that the nomination of the Saylorville Archaeological District also will be reconsidered after the project is placed in operation. Obviously, the intent of the MOA was to summarize the responsibility of the COE in the Saylorville project within terms of the federal laws. The ISU project archaeologists interpreted the MOA to mean that the COE was being brought into compliance with cultural resource legislation, although it was the COE planning staff that had initiated action on the MOA. During this same period many other federal, state and local agencies were facing the same difficulty of interpreting the review and compliance procedures for historic preservation actions. The COE had an additional complication with the

Saylorville project in that its construction had been authorized before the advent of current historic preservation legislation.

The ISU program for data recovery in Saylorville started with one NPS contract in 1974 and continued from 1975-1981 with extensive COE funding. Slightly more than one million dollars was delegated to archaeological work during this period. The COE contributed about 94% of the money, while the NPS and ISU shared the remaining 6%. The ISU crews established a reservoir monitoring program for all construction activities and (after 1977) lake erosion effects. They also surveyed new recreational facilities, tested many sites, and conducted data recovery ("salvage") excavations on several sites.

"Contract Completion Report Stage 1," by David M. Gradwohl and Nancy M. Osborn (1975b. This is a terse summary of monitoring activities in reconnaissance units 1,2,3,15 and 17 and of testing and surface investigations on 6 sites. The material analysis of sites in this report appears in later reports. The authors discuss problems in coordinating their site monitoring activities with the schedule of COE construction in recreation areas.

The NPS funded intensive work on three sites. The DeArmond/Barrier Dam site (13PK154) was in the midst of construction of the Big Creek barrier dam when ISU salvaged the site in 1974. Likewise, 13PK165, the Saylorvillage site, was threatened by Saylorville Dam construction when it was excavated in 1974-75. In 1977 the Bennett Bend site (13PK183) was selected for a post-inundation study. Here, two sheets of clear plastic were placed against vertical excavation walls prior to inundation.

"Emergency Archaeological Investigations at 13PK154 (the DeArmond/Barrier Dam Site), Saylorville Reservoir, Iowa," by Nancy M. Osborn and David M. Gradwohl (1977, 1980). Artifacts representing the Late and Middle Woodland and Late Archaic periods were recovered largely from plowzone contexts.

"Emergency Archaeological Investigations at the Saylorvillage Site (13PK165), a Late Woodland Manifestation with the Saylorville Reservoir, Iowa," by Nancy M. Osborn, David M. Gradwohl and Randall M. Thies (1978). In situ artifacts were plotted at this site. The distribution pattern appears to be a light structure with a central hearth. Saylor ware is defined.

"Eyeing the Gathering Waters Whilst Building the Ark: Preparation of Archaeological Site 13PK183, Saylorville Reservoir, Iowa, for Post-inundation Study," by David M. Gradwohl and Nancy M. Osborn (1977). Site 13PK183 was substituted at the last minute for site 13PK149 because of high water. The site location was platted with permanent bench marks in the uplands. Soil was removed from the soil profile to yield pollen and snail remains.

Efforts to mitigate project impacts on archaeological sites increased substantially with the negotiation of the "Stage 2" contract between the COE and ISU in June of 1975 (see Osborn and Gradwohl 1981:6-9). Originally this contract encompassed construction monitoring and site testing. In 1977, 1978 and 1979 the contract was modified to cover site excavation for the purpose of mitigating impacts on significant sites and to cover survey of the Prairie Flower recreation area.

The original Stage 2 contract ran from 1975 to September 1976; thereafter it was not officially modified until September 1977 [although continuing negotiations and exchanges of information between ISU and the COE filled much of this period]. The year lapse in contract coverage caused smoldering controversies concerning COE compliance with preservation laws to surface (see Gradwohl and Osborn 1975b:3-4) in a series of correspondence between ISU personnel, the State Historic Preservation Officer, the COE and congressional representatives (files at the Office of Historic Preservation, Des Moines). From the ISU perspective the crux of the issue concerned exchange of information between ISU and COE personnel about advance notice of potential construction areas and activities. During 1977, ISU continued to monitor the project area but had no funds to carry out testing and excavation. At least four sites were destroyed without mitigative activities during the summer of 1977. From the COE's perspective there were at least three issues that delayed the contract. The MOA was being implemented, and one of its specifications was monitoring of project effects on known sites (the lake was just filling in 1977). Secondly, the 1977 federal fiscal year witnessed a switch to competitive procurement for large contracts like Saylorville. Thirdly, ISU researchers had not provided the COE or SHPO with a research design for all of their Saylorville archaeological investigations.

Investigations dating to the period 1975-1980 are described in the Stage 2 report (Osborn and Gradwohl 1981). This is a report of testing sites that would be inundated by the permament pool and sites threatened with destruction because of recreational developments in Polk County. Intensive testing of 13BN103, a stratified site, also is included. Two of the sites in Stage 2 were analyzed in great detail in masters theses. Because of its large scope the Stage 2 report describes sites representing Late Archaic through Late Woodland and Great Oasis manifestations. The cultural summary at the end of the Stage 2 report adds details (e.g. some point types, functional artifacts, subsistence data, some settlement observations) to Gradwohl's 1974 cultural summary, but the Stage 2 summary does not establish a formal classification scheme for the central Des Moines valley nor does it deal with the processes of culture change. The geomorphic and soils data in Stage 2 are site-specific and not applicable to regional modeling.

"Saylorville Stage 2 Contract Completion Report," by Nancy M. Osborn and David M. Gradwohl (1981). Report and analysis of testing on 34 sites (actually intensive excavation on 13PK111, -149, -183, 13BN103); report of shovel-testing in the Prairie Flower recreation area (inclusive of 9 sites). The cultural summary integrates site information into the established (Gradwohl 1974) cultural-historical framework. A separate appendix includes detailed site maps.

"The Archaeology and Ecology of the Brassica Bench Site (13PK251), Polk County, Iowa," by Randall M. Thies (1979). This master thesis provides a detailed analysis of a multi-component site (Archaic, Early Woodland, Late Woodland, Oneota) in a colluvial deposit on a till bench. The author separates Woodland and Oneota components but does not recognize a buried Late Archaic component with a radiocarbon date. The alluvial Fan deposit also associated with the till bench is not discussed.

"Darr-es-Shalom: the Culture History and Ecology of a Stratified Archaic through Woodland Archaeological Site, Polk County, Iowa," by Robert Douglas

Timberlake (1981). This major site in the Des Moines floodplain produced early Late Woodland and Late Woodland components over Late Archaic (house) features. The lower deposits are radiocarbon dated and correlated with the geomorphic stratigraphy. The author presents a catchment analysis of the site locality and analyzes cultural differences between stratigraphic levels.

While the Stage 2 fieldwork was in progress, the cultural resources staff of the Environmental Branch, Rock Island COE, produced Design Memorandum 6c (U.S. Army Corps of Engineers, September 1978). This was titled "Cultural Resources Feature Design Memorandum," and it was intended to: describe what archaeological work had been accomplished in Saylorville Lake up to 1978; describe how the archaeological work had been administered; describe anticipated project effects on sites; and develop a plan for final mitigation of site impacts. A coordination meeting with "appropriate interests" (ISU, COE and SHPO personnel) had been held in January of 1978 to select 51 prioritized sites for the final phase of cultural investigation. Design Memorandum 6c supplements decisions made at that meeting by providing written rationales for focusing work on the 51 sites. Pages 15-18 and Appendix F of this document present a detailed plan and scope-of-work for phase III data recovery to mitigate project effects on priority sites.

"Cultural Resources Feature Design Memorandum (no. 6c)," by staff of the Rock Island District, U.S. Army Corps of Engineers (1978). Appended to the report are maps of plans for developing recreation areas, a bibliography of archaeological work, a list of Saylorville sites (with cultural identifications, acreage, and preservation class), project maps showing site locations (sites shown as standardized circles, many of which are inaccurate), and appendices for the MOA, scope-of-work, cost chart, and relevant laws.

By December 1979 a scope-of-work had been formulated for ISU's Stage 3 investigations in Saylorville (Osborn and Gradwohl 1982:Appendix F). This scope-of-work differs from the one in the 1978 Memorandum 6c in the following manner. The 1979 version is titled "Scope of Work for Archaeological <u>Mitigation</u>, Saylorville Lake Archaeological District," (emphasis added) but throughout the text the references to digging are to <u>testing</u>, not data recovery. Still, the 1979 document requests that, "...services shall be performed in a manner to insure the greatest contribution to an understanding of the prehistory of Iowa."(pg.136) It also requires that the six research questions be addressed, and those questions are appended with the SHPO's comments on carrying out a program of phase III data recovery.

The ISU proposal (revision dated 28 July 1980) for conducting the testing of priority I sites (Appendix F in Osborn and Gradwohl 1982) is a clear statement to do site testing (i.e. phase II) and not phase III data recovery. The principal investigators propose to test 15 priority I sites "...to determine if, indeed, they possess the archaeological significance or potential to merit additional archaeological work, i.e. excavation."(pg. 151) Furthermore, the investigators set forth as one of their goals "to determine:...e) the potential for these sites to answer the formally-posed research questions." (pg.151-2) Evidently, the ISU archaeologists saw a different purpose (i.e. testing) in the Stage 3 investigations than the COE had originally intended for the final stage of work in Saylorville Lake (i.e. data recovery).

The Stage 3 report (Osborn and Gradwohl 1982) describes test investigations of 15 sites, most being in Boone County. The investigators probed the sub-surface of each site by drilling solid cores and in some cases opened backhoe trenches before pursuing hand test excavations. These sub-surface explorations were intended to provide data on the soils and geomorphology of each site, a strategy specified in the scope-of-work.

"Saylorville Stage 3 Contract Completion Report," by Nancy M. Osborn and David M. Gradwohl (1982). Investigations of each site are covered in written text, site maps and artifact tables. A brief cultural summary is presented, and recommendations for future excavations are made. Potential site data is correlated with six research questions. Appendices include detailed site maps, classifications of chipped stone and ceramic artifacts (i.e. general classifications), soils and geomorphic profiles, analysis of human remains, analysis of obsidian and radiocarbon dates.

Stage 3 was the last and largest ISU-COE contract in Saylorville Lake. For the purposes of this Overview the NPS, SHPO and COE comments on the Stage 3 draft manuscript (see Appendix I in Osborn and Gradwohl 1982) are useful indicators of progress in cultural resource management in Saylorville Lake as of 1982. There are five substantive comments that rise above other comments concerning mundane editorial and contractual obligations. 1) Abundant soils and geomorphic data from the project were not employed to seek out buried surfaces where cultural deposits might exist apart from those found on the surface (pg.204). 2) Cultural material was not adequately identified in stratigraphic context so that an analytical discussion of cultural sequences cannot be developed from the site data (pg.201). 3) Artifact descriptions were selective and not based on complete attribute lists (pg.203). No classification scheme for projectile points and ceramics has been developed for the central Des Moines region. 4) There was a discrepancy in expectations (i.e. phase II, III) between the ISU and COE scopes-of-work, therefore the six research questions were not resolved (pg.207). 5) Most importantly, there was no synthesis developed for the culture history of the region (pg.208).

A variety of other written materials were added to the Saylorville bibliography in recent years. None reach analytical conclusions beyond those in the Stage 3 report, except the Broihan masters thesis. The latter contains an analysis of two Woodland/Great Oasis sites, one of which yielded several burials.

"SN-3233(2)-51-08. Bridge replacement, Boone County, a Report of the Iowa Department of Transportation, Secondary roads," by Anton Till (1978). Site 13BN231 tested by post holes; material in the Ap.

"Iowa Highway Archaeology Annual Report 1978-79," by John Hotopp, David Cook and Anton Till (1979). Contains a description of testing at 13BN231 and references to 13BN035 and -200.

"Project Completion Report, Secondary Roads 4(11) AHL-000(1)-SP-77, Polk County," by Richard D. Carr and Joseph A. Tiffany (1980). Survey and testing of sites 13PK147 and 13PK203.

"Archaeology of the Central Des Moines River Valley: a Preliminary Summary," by David M. Gradwohl (1982). Contains an overview of recent investigations.

"Fisher Lake drainage improvement, Polk County," by Ricky G. Atwell and Joseph A Tiffany (1984). Tested site 13PK415 for buried soils and cultural material.

"The Archaeology of the Blosser and Old Moser Sites: Woodland through Great Oasis Manifestations in the Des Moines River Valley, Iowa" by John Broihan (masters thesis in preparation).

"A Phase 1 Archaeological Survey of the Area of the Proposed Saylorville Hydroelectric Facility, Saylorville Lake, Iowa," by David M. Gradwohl and Nancy M. Osborn (1985). Covers site survey on the east side and below the Saylorville Dam.

In the 1980s the COE archaeological contracts in Saylorville shifted to other archaeologists. The first of these was David W. Benn (1981-Luther College Archaeological Research Center; +1982-Southwest Missouri State University). The COE committed funding in 1981 to cultural resource management in the newly acquired Downstream Corridor. This floodplain below the Saylorville Dam and extending into the City of Des Moines became Corps property as part of an overall Des Moines River flood control program. Benn joined with E. A. Bettis, a geologist, to propose that a joint archaeological/geomorphological survey be done in the Downstream Corridor. Their investigation would result in the development of a landscape model which would delineate geological changes for the Holocene period. The model was employed to establish the potential for preservation of buried archaeological materials as well as to place known sites in their landscape (chronological) context.

"Archaeological & Geomorphological Survey of the Downstream Corridor, Saylorville Lake, Iowa," by David W. Benn and E. Arthur Bettis III (1981). Thirty-eight sites are reported in the context of TW, TH, TI and TL terrace systems. Emphasis is placed on identifying small sites with diffuse scatters.

"An Archaeological and Geomorphological Survey in the Central Des Moines River Valley, Iowa," by E. Arthur Bettis III and David W. Benn (1984). This is a condensed version of the article above with additional discussion of site preservation potentials.

The Downstream Corridor survey of 1981 was followed in 1982 by a phase II project to test the significance of nine prehistoric sites (Benn and Harris 1983). Most of the tested sites proved to be seasonal camps and temporary processing stations like most of the sites in the Corridor. One of the few domestic sites (13PK407) was an Oneota camp destined for excavation in the following year. There were three principal conclusions from the 1982 testing. 1) Most sites on low, alluvial terraces are small and have diffuse scatters of material. The limits of such sites are nearly impossible to define by hand excavation; it is more effective to define the limits of the landform which the site is on (in). 2) Survey and testing in alluvial environments is complicated methodologically because of the natural force that created this environment--water, particularly high water. The seasonal vagarities of fluvial environments make archaeological contracting an unpredictable enterprise. 3) It is a mistake to attempt empirical study of the

archaeological record independent of that record's sedimentary context. This is because the archaeological record is a dependent variable of the fluvial system.

The survey and testing program in the Downstream Corridor was repulsed in meeting one of its goals: to develop quantitative estimates of site densities and distributions in the floodplain (Benn and Harris 1983:120). Two features of alluvial landscapes thwarted attempts to quantify site data: the enormous volume and complexity of the sediments. The principal investigators of the Corridor work argued that some traditional epistemology of archaeological work had reached its limits in alluvium. "In particular, the discipline's emphasis on [random] statistical sampling, finite site limits, and concepts of "significance" (vis-a'-vis the National Register) have constrained many researchers' perspectives such that important data are either ignored or forced into irrelevant or fallacious interpretations." (Ibid.) No quick solutions to this dilemma were offered, but the authors suggested that future investigations cover broader areas of varying landforms where regularities in site context, density and patterning could be revealed.

The most recent aspect of archaeological work in the Corridor was a project for data recovery at the Christenson Oneota site (13PK407). Portions of this buried site adjacent to the eroding river bank were excavated in 1983.

"Excavations at the Christenson Oneota Site (13PK407), Central Des Moines River Valley, Iowa," by David W. Benn (1984). Material on the floors of probable houses was piece-plotted. Artifact analysis covers lithic, bone and shell remains, including a functional analysis of tools. Ceramics are analyzed for the symbolic meanings of their decorations. Christenson was a winter encampment and may have been similar to other sites upriver.

In 1982 the COE renewed archaeological work in the reservoir proper by letting a contract to Patricia Emerson of Impact Services, Inc., Mankato, Minnesota, for the purpose of surveying 27 sites. These sites were to be affected by a scheduled pool rise (833-836/838ft). Three of the sites were in Dallas County and the rest in Polk County. In 1983 the contract was modified to include testing on nine of the sites that appeared to have potential research value. Eventually six of these sites were subjected to phase III data recovery for another COE contract (1983).

"Resurvey and Intensive Testing of Archaeological Sites at Saylorville Lake, Polk and Dallas Counties, Iowa," by Patricia M. Emerson et al (1983). The four volumes in this investigation thoroughly cover all aspects of the work. Included are detailed site maps, descriptions of the work, soils and geomorphic analysis of site locations, and extensive appendices for artifact descriptions.

"Archaeological and Geomorphological Data Recovery at Saylorville Lake, Polk County, Iowa," by Patricia M. Emerson and Harlan R. Finney (1984). Sites 13PK023, -259, -264, -274, -276, -314, and -315 are discussed. The same thorough coverage is given to these sites as appears in the survey and testing volumes. The investigators found only a small amount of _in situ_ remains because erosion had damaged many of the sites. Of special significance in this and the previous volumes is the discussion and analysis of the effects of lake erosion on each of the sites.

The reports by Emerson et al are useful works because their data is reported in detail. Other scholars can utilize the data to form their own interpretations about aspects of culture history and geomorphology in the project area. There are two shortcomings in the Emerson volumes that seem to be the result of limitations built into the original contracts. First, all of the investigations were site-specific, i.e. they focused on particular impact zones defined by site boundaries (the purpose of the projects was, first and foremost, review and compliance). This limitation meant that the geomorphic investigation covered only small parts of the permanent reservoir (where the lowest terraces are submerged!). The geomorphic study could not be a broad-based consideration of landforms and stratigraphic relationships in time and space. Therefore, Finney's geological study (Emerson et al 1983:vol. I pg.10-12, vol. II pg 6-8) reveals the difficulty he had in dating terraces and connecting his terrace sequence with the Downstream Corridor terraces. The second limitation faced by Emerson (which she realized; see Emerson and Finney 1984:132) was the absence of a locally developed chipped stone and ceramic classification system. Not having had previous association with the Saylorville project, she did not develop artifact classifications but relied on the familiar, long-standing Illinois Valley sequence (e.g. Griffin 1952). The application of far-removed typologies to local situations distorts culture history and obscures important local developments.

This review of the literature has reached 1984 when currently running projects were contracted. Two are just completed (as of October 1985), while the results of two other projects will be forthcoming in the late fall of 1985. One nearly complete study is a compilation of oral records pertaining to the historic periods in Ledges State Park. This project is being done by Nancy Osborn for the Iowa Conservation Commission. The other project is resurvey and testing of impacted sites in Saylorville recreation areas, a review and compliance project for the COE. A recheck of the status of sites in recreation areas was mandated by the Memorandum of Agreement for the Saylorville Archaeological District.

"Cultural Resources Investigations in Recreation Areas, Saylorville Lake, Iowa," by David G. Stanley and David W. Benn (1985). Thirty-six archaeological sites were reconnoitered and many tested to determine their present condition and potential research value. Most were found to be damaged or destroyed beyond future usefulness.

Another on-going Saylorville project is a geological survey and modeling of landforms being done by E. A. Bettis III and B. Hoyer of the Iowa Geological Survey. They conducted field investigations in the fall of 1984 and spring of 1985 for the COE. Their findings are integrated in the project for which this volume is being composed, an Overview and Management Plan for Saylorville Lake. Work on the Overview began in the summer of 1984 with a compilation of site records and maps and with a review of the literature.

THE CHARACTER OF PREVIOUS INVESTIGATIONS & FUTURE NEEDS

The history of archaeological work in the Saylorville project can be summarized in two statements. The methods of each succeeding project have progressed in scope, complexity and sophistication. And, the quantity and quality of knowledge have increased.

The progression of Saylorville investigations resulted first in an accumulation of a huge body of data and then in initial attempts to apply cultural and geological models to the area. The first NPS projects in 1962 and 1966 amounted to reconnaissance to see what cultural information was available in the reservoir. In the following 14 years the ISU crews multiplied the site data hundreds of times by conducting reservoir-wide surveys, dozens of test excavations and several large-scale site excavations. The ISU contract reports are largely descriptive, while the master's theses, Gradwohl's paper (1974) and the NPS reports (e.g. Gradwohl 1975; Osborn, Gradwohl and Thies 1978) contain analytical material. The projects by Impact Services, Inc. added more site data with the additional dimensions of geomorphic/pedological context and assessment of the effects of inundation. The Downstream Corridor projects and on-going, Bettis/Benn projects in the reservoir have introduced a new approach to cultural analysis, i.e. placing cultural resources in a landscape context where site preservation and settlement patterns can be rigorously analyzed.

Today, all of the data and epistemology is available to develop a synthesis of the culture history of the project area. But, previous investigations have left gaps in the analytical realm. Sufficient data exists in the ISU artifact repositories and in files all over the Midwest; we do not need more artifacts from Saylorville Lake, as Emerson (Emerson and Finney 1984:132) has suggested, to undertake analyses of existing collections. Rather, analytical work is needed in five areas (see Proposal for this contract, Appendix C) to bridge gaps that hinder synthesis of the area's records.

1) Landscape Modeling. The entire Saylorville locality must be viewed as an open geomorphic system where the landscape is undergoing constant modifications due to erosion and sedimentation. This means that the upland summits and hillslopes are considered with the terraces in determining the complex processes of change that have affected and will be affecting archaeological sites. We need to apply models of hillslope development (Ruhe and Walker 1968) as well as models of terrace building (Bettis and Benn 1984) to the problems of site context and preservation. The result will be a holistic model for generating predictions about site location, age and degree of preservation and for comparison with other regional, geological sequences.

2) Analyze Assemblages and Sites. There is a pressing need to analyze diagnostic materials in existing site collections so that typologies of <u>regional</u> significance are developed (see Emerson and Finney 1984:132). The chipped stone typology should focus on morphological characters separate from functional categories. The typologies for pointed/hafted bifaces (projectile points) and ceramics should reflect regional stylistic patterns by naming new local types rather than borrowing type names from distant regions.

Prehistoric site functions should be defined more precisely and related to landscape position so that settlement patterns may be investigated. Historic materials should be analyzed more rigorously so that sites may be sorted into functional and chronological categories.

3) Cultural Sequence and Culture Process. There is a need to supplement the existing RP3 document (E. Henning 1982 in revision) by analyzing the cultural processes responsible for the cultural sequence that is the framework for the study units in RP3. This means we need data concerning community and settlement patterns, comparisons with cultural sequences from other parts of the State of Iowa, and some notions of the cognitive aspects that dominated the daily existance of aboriginal societies (cf. Hall 1977).

4) Evaluate Existing Data Base. After deficiencies in items 1,2 and 3 have been resolved it will be possible to evaluate the existing data base for its gaps and shortcomings. The landform model coupled with site location and function data makes it possible to identify biases in site location strategies of past archaeological work and to specify what categories of site data are missing because of landscape evolution. Having typologies and regional comparisons opens the opportunity to pinpoint gaps in the local cultural sequence. Criteria used to define site significance in past investigations can be reconsidered.

5) Prioritize Evaluation/Mitigation Efforts: Only a small portion of the total site population in Saylorville is recorded. Many sites have been destroyed by natural and human actions, but Saylorville Lake is one of the best surveyed parts of Iowa for archaeological sites. Many of the known sites contain duplicate information; i.e. categories of sites contain almost the same information because they had similar functions during the same cultural period. Since funds for archaeological research are finite, the prioritization of research questions and goals is unavoidable. Investigations should be prioritized to deal with: unique sites of local, state or national significance; the resolution of data gaps; defining the parameters of "missing data" (i.e. eroded landforms and sites); salvaging "threatened" categories of data or sites; anticipated and systematic long-term impacts on sites.

III
OVERVIEW OF PREHISTORIC CULTURES

An in depth review and analysis of the prehistory of the Saylorville project is a huge undertaking because of all the information accumulated by surveys, testing and site excavations. To relate and integrate all of this information in one overview would be too large a project. I have opted to summarize much of the Saylorville data in appendices to this report and to the Management Plan (volume II). The Saylorville site file and site maps are appended to the Management Plan. This volume contains appendices for the hafted biface (projectile point) typology (Appendix A), ceramics (B) and absolute dates (E).

The hafted biface typology was done by the writer at the Archaeology Laboratory, ISU. Examples of all diagnostic points and hafted artifacts were pulled from the Saylorville collection boxes and sorted into types on a large table. Types were based on morphological differences with preference being given to shape of the haft element, proportional size and flaking/grinding characteristics. Then, specimens in each type were measured with a calipers and described according to flaking style, material and exceptional characteristics. Attributes and photographs of each type appear in Appendix A. Names for types and estimated period of use were established by refering to Toby Morrow's (1984) typology for Iowa and to other references in the appendix. It is presumed that new types will be added as more work is done in Saylorville Lake.

KEY
HAFTED BIFACE TYPES

L=lanceolate St=stemmed SN=side notched
CN=corner notched T=triangular

Ceramics were processed for typing in the same manner as points. Diagnostic rims were pulled from site collections. Rims were sorted first in wares based on attributes of paste type, surface finish and vessel shape/rim orientation. (Paste proved to be a difficult attribute, since most Saylorville ceramic pastes are coarse.) Types were sorted within wares based on decoration (Appendix B). New Woodland ceramic types were named from geographic places and one famous person (Van Hyning).

The appendix (E) of absolute dates was created by gleaning past publications and ISU files for references to laboratory analysis of datable materials. The most recent (unpublished) dates from Bettis' and Benn's investigations are included as well.

Appendices of the site list and site maps (Appendices A and B, Management Plan) were generated from information in the state site files (Office of the

State Archaeologist, Iowa City). Site locations, landform positions and sizes were cross-checked with site maps at ISU. The writer inspected all ISU site collections to evaluate the cultural age(s) of sites. All cultural ages used in this document represent the judgement of the writer; in some instances these do not agree with past published cultural affiliations.

Paleo-Indian

A pre-Paleo-Indian period is not considered, because the project area was beneath glacial ice shortly before 12,500 P.B. The Paleo-Indian period probably dated 12,500-9500 B.P (Jennings 1974:71). Within this period most fluted points date to the first 2000 years, while Dalton and other unfluted lanceolate points date to the next 1000 years (Goodyear 1982).

Years of research in the Saylorville project have not yielded substantive numbers of artifacts that can be attributed to Paleo-Indians. Gradwohl (1974:93) implies such artifacts are in private collections from the Polk City and Boone areas. Only four sites within the project area have produced Paleo-Indian points (Appendix A, Figure A.2). A "Meserve" (see Goodyear's 1982:382-3 discussion of this type) point was found on 13BN234, an upland site. Another upland site, 13BN233, yielded an unfinished basal fragment made of winterset chert. This fragment had been discarded after the fluting flake hinged through the artifact at the shoulder. Two sites on benches also date to this period. A Dalton point made of winterset chert came from 13BN244; this specimen has extensive lateral blade resharpening, a typical attribute of Dalton. The other bench site, 13PK165, contained two lanceolate bases, both with collateral flaking and lateral grinding. These two points appear to be Agate Basin forms.

Considering the large amount of project area archaeology, the relative paucity of Paleo-Indian remains is a problem that seeks solutions involving non-cultural data, i.e. geomorphology. By 13,000 B.P. most of the project area had emerged from beneath glacial ice. But, the valley was subjected to massive outwash floods from melting ice until circa 11,000 B.P. The outwash valley environment would not have been a suitable habitat for a permanent population of hunters because of the dangers of flooding. Even if man did camp within the valley before circa 11,000 B.P., this evidence would have been destroyed by floods up to the elevations of high benches. That hunters did occasionally use the uplands during the Late Wisconsinan episode is evidenced by the fluted point fragment from 13BN233.

The valley was more habitable between 11,000 and 9500 B.P. after the heavy floods abated. At this time the valley walls were composed of a series of stepped benches--the results of earlier flood erosion--overlooking low, gravelly outwash terraces on the valley floor (Figure 5; no alluvial fans had formed yet). The valley was forested (see Wendland 1978:278) and would have provided a comfortable habitat for game animals and human hunters. The evidence that benches were visited by paleo-Indians is scant (i.e. 13PK165, 13BN244) despite extensive survey and testing by ISU crews and other contractors on this landform. Therefore, it is suspected that Paleo-Indian occupations of benches were infrequent. Paleo-hunters might have utilized the floodplain and outwash terraces, but no such sites are known on Wisconsinan terraces. The floodplain of that period is now buried beneath the TH terrace,

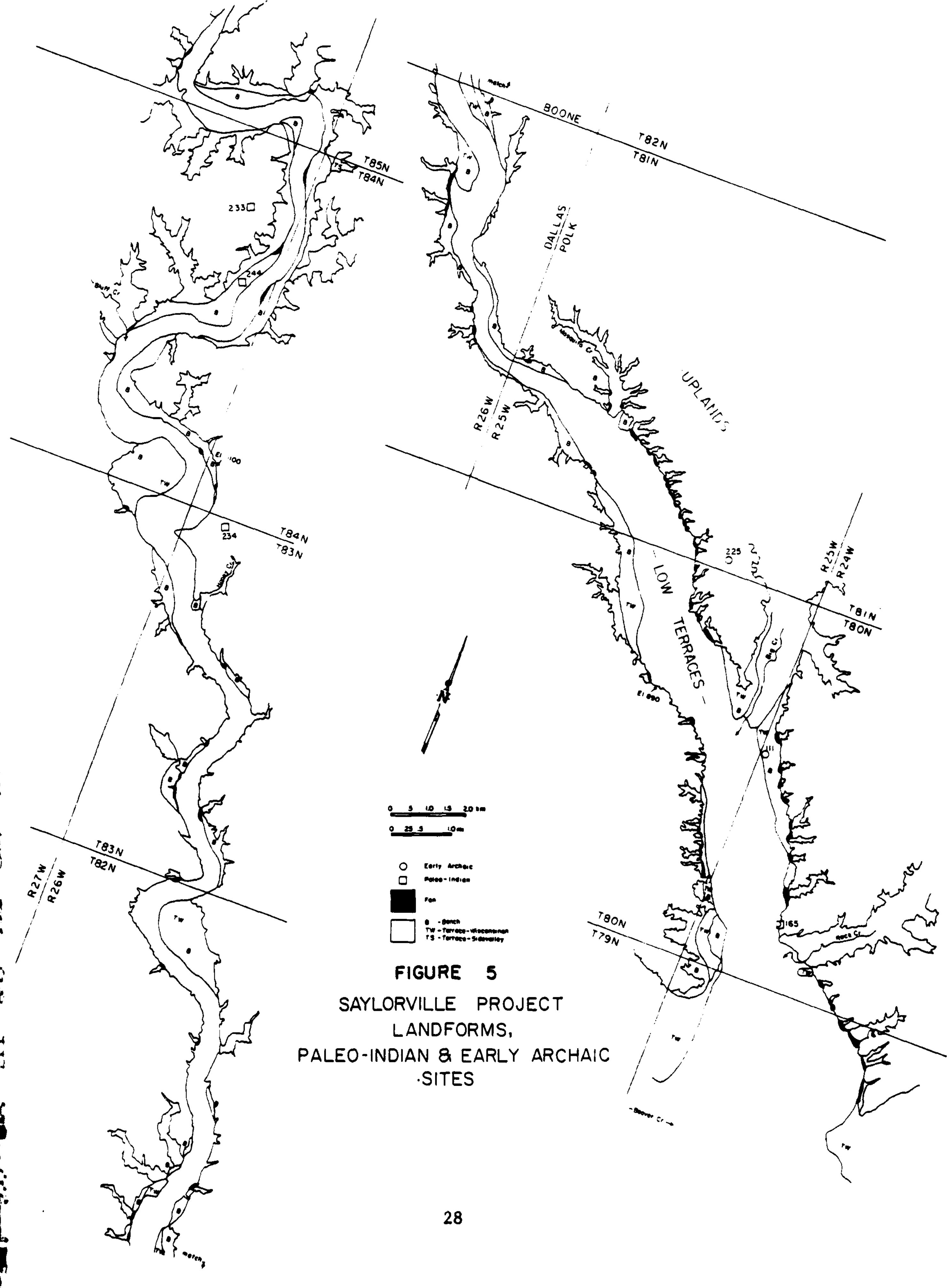

FIGURE 5

SAYLORVILLE PROJECT
LANDFORMS,
PALEO-INDIAN & EARLY ARCHAIC
SITES

fans and colluvial slopes at the margins of the present day valley, although parts of the old floodplain have been destroyed within the meanderbelt (i.e. TI, TL terraces and present channel). That paleo-floodplain lies beneath the water table and is inaccessible to ordinary archaeological investigation.

While we are uncertain if Paleo-Indian remains are buried on the valley floor, it appears that these remains occur infrequently on benches and uplands. These latter landforms have received little or no deposition, so artifacts should be available to surface surveys where there are no forests. For instance, the CIRALG survey in central Iowa (Gourley 1983) located few sites and no Paleo-Indian sites in the uplands. A working hypothesis based on this data is that Paleo-Indians did not frequent the central Des Moines valley as often as they did other areas in Iowa. Paleo-Indian and Early Archaic remains seem to be more frequent in the upper Skunk River basin east of the Des Moines valley (Abbott and Bettis n.d.), but no one is certain why.

Early Archaic

This is a transitional period for which there are no dates and few type artifacts in the project area. Furthermore, there are significant typological and chronological differences in the published literature for sites east and west of the project area. At 9500 B.P. the Des Moines valley lay on the interface between western prairie and eastern woodlands (Wendland 1978). Thus, archaeological interpretations of this period may be reflecting some ecological realities.

Anderson, Shutler and Wendland (1980:263) placed the Early Archaic period between 8500 and 6500 B.P. at the Cherokee Sewer site in northwest Iowa. The period's assemblages from the Sewer site (horizons IIIa-b, II) include lanceolate and slightly stemmed lanceolate forms as well as medium sized side notched points (Simonson type; Frankforter and Agogino 1959) and unnotched triangles. At the Koster site in southern Illinois the Early Archaic levels (circa 9000–8450 B.P.) had side notched and stemmed points as well as Daltons (Brown and Vierra 1983:182). The Early Archaic layers at the Pigeon Roost Creek site in northeast Missouri contained similar forms of the same age with the addition of lanceolate points (O'Brien and Warren 1983:91).

In the Saylorville project only one point is clearly associated with midwestern Early Archaic assemblages. It is a Kirk point (CN1, Appendix A) from 13PK225, and upland site. Kirk is a type common in the southeastern United States (Coe 1964). The Saylorville specimen retains basal thinning and grinding and beveling on edges of the blade as characteristics that are typical of Early Archaic period point types. Other Saylorville point categories attributed to later periods may contain specimens that were manufactured during the Early Archaic period (e.g. SN7 at 13PK111). [The Saylorville point typology is based on morphological characters.] For instance, some lanceolate specimens in type L1 (Appendix A, Figure A.1) are slightly stemmed in the manner of lanceolates from the Cherokee Sewer site horizon IIIa, although none of the Saylorville examples have basal grinding as the Sewer site points have. A more difficult category to age is SN11, points with deep side notches and concave (sometimes ground) bases (Figure A.9). Points of this type with grinding were found at Hadfields Cave (Benn 1980), a Late Woodland site in eastern Iowa, and in horizon II at the Cherokee Sewer

site (i.e. the Simonson type). Point types SN7 and SN10 (Figure A.8) also have forms similar to types at the Cherokee Sewer site (see also Morrow 1984, Little Sioux type) but lack grinding on the base.

The typological problem at Saylorville cannot be resolved without points from stratigraphic contexts. Regarding the age of the Early Archaic period, I favor interpretations from eastern sites, i.e. a time span of circa 9500-8000 B.P. Cultural associations like Dalton and Kirk points as well as later point forms that will be discussed in future paragraphs suggest that cultures of the project area were influenced more from the east. Additional evidence of eastern associations is present in the Hardin Barbed points from the Soldow site (Flanders 1977:Figure 8; Flanders calls the points "Scottsbluff"), an Early Archaic assemblage from the Des Moines River in Humboldt County which is north of the project area.

With only one Early Archaic site identified in the project area, it is not possible to define settlement patterns. Lacking a reliable point typology tied to chronological periods, we cannot identify Early Archaic sites from surface collections of upland and bench sites--places where the Early Archaic would be on the surface. Early Archaic sites in the valley would have to occur on a low terrace which is now buried beneath the TH terrace and alluvial fans (see Figure 5). Like Paleo-Indian remains, the Early Archaic material would be below the modern water table.

Middle Archaic

This period probably dates between 8000 and 4500 B.P., these dates being averages of dates from other sources (see Griffin 1967; O'Brien and Warren 1983; Brown and Vierra 1983). Brown and Vierra (Ibid.) divide the Middle Archaic into three periods based on the Koster site stratigraphy: MA1, 8300-7600 B.P.; MA2, 7300-6850 B.P.; MA3 (Helton phase), 5800-4900 B.P. The information from Saylorville Lake is not adequate to know if the three periods apply to central Iowa. Nonetheless, the Saylorville point typology (Appendix A) is correlated with this tripartate division.

The Saylorville projectile points of the Middle Archaic period are dominated by side notched forms. Varieties of Matanzas, Godar and Raddatz types (Appendix A, SN4, SN5, SN6, SN8) are the most common, while single examples of St. Charles (SN1), Little Sioux (SN7) and SN3 came from some sites. A few examples of corner notched forms also may belong in this period (e.g. CN2, Rice Corner Notched variety; CN9, Turin variety). Similar side notched points were found in horizons I and II at the Cherokee Sewer site (Anderson 1980) and in the Middle Archaic levels at Koster (Brown and Vierra 1983:182-4) and the Pigeon Roost Creek site (O'Brien and Warren 1983). The Rice Corner notched type also came from the Koster site. That side notched point forms were used for a long period during the Middle Archaic has been noted by O'Brien and Warren (op. cit.:96) and others (e.g. Brown and Vierra 1983:186). Many of these points are reworked so that subtle stylistic variations are difficult to recognize, if indeed they exist.

The Middle Archaic period was a time of sediment aggradation in the Des Moines valley. Silts and sands were eroded from uplands and sidevalleys to be deposited in huge formations on the valley floor. In the openings of small

sidevalleys allvuial fans began to accumulate after 8500 B.P. (see Hoyer 1980). Fans grew rapidly to depths of five or more meters by circa 4000 B.P. and then slowed in their growth until 2000 B.P. when fan formation virtually stopped. Fine sands and silts being transported by the river were deposited as a huge terrace across the floor of the valley. This is the High Terrace, a 3-8m deep unit that dominates the present day valley. The time span of heaviest sedimentation in the valley corresponds to the Atlantic episode (ca. 8400-5060 B.P.; Wendland 1978:278), a drier, warmer period dominated by Pacific air masses in the central United States. This drying period is widely referred to as the Hypsithermal (cf. Wright 1968). The tall grass prairie of the Prairie Peninsula and the short grass prairie of the high plains expanded eastward under the influence of the westerly air mass. The encroaching prairie would have surrounded the forested Des Moines valley.

Recently, several researchers have characterized Early and Middle Archaic subsistence strategies as mobile foraging, a pattern involving seasonal gathering and dispersal of extended family bands (<20 persons) (see Warren and O'Brien 1982a,b; Lewis 1983; Brown and Vierra 1983:188). During the Middle Archaic human occupations are thought to have focused on the more mesic river valleys, where enclaves of forest had resisted the encroachment of the prairie (Cook 1976:118-19; Anderson, Shutler and Wendland 1980:266; Joyer and Roper 1980:19; Warren and O'Brien 1982b:392), except that temporary procurement sites were situated in the uplands, especially to obtain large mammals like bison and wapiti. Relative rates of culture change varied from east to west, even as most researches imply that the Middle Archaic was a period of <u>gradual</u> change. At Koster the shift toward long-term use of a base camp began after circa 7300 B.P. (Middle Archaic 2; Brown and Vierra 1983), a shift that heralded the eventual development of sedentary communities and intensive exploitation of floodplain resources by the Late Archaic period. In northeast Missouri, Warren and O'Brien (1982b:392) found that the tendency for intensive food production of wild and cultivated plants appeared later in the Woodland periods, and that the transition from mobile foraging to semi-permanent communities occurred slowing throughout the Archaic periods. Farther west on the prairies at the Cherokee Sewer site (Anderson, Shutler and Wendland 1980) the Early Archaic pattern of communal bison hunting appears to have persisted into the Middle Archaic, although bison procurement may have been a seasonal activity pursued when smaller bands were not foraging for other foods (see Schmits 1978:166-7).

Twenty Middle Archaic sites have been identified in the Saylorville project (Figure 6). A majority of these (70%) are situated on uplands, benches or Wisconsinan Terraces where they are accessible by surface collection techniques. Only three sites are on each of the fan and TH landform types. Fans and TH terraces were aggrading during this period, thus Middle Archaic materials would be buried in both landforms. No Middle Archaic sites can occur in the present meanderbelt, i.e. on TI of TL terraces. The TH terrace that once covered the present meanderbelt is gone along with any cultural material that was in it. Middle Archaic sites are most certainly present in fans and TH sediments, but exposures of these sites are rare and confined to a few gullied fans or to a few river bank profiles. One bank exposure is 13PK414 in a late TH terrace in the Downstream Corridor (Benn and Bettis 1981). This diffuse site has yielded little material except a three-quarter grooved ax, thinning flakes, a few bison bones and bits of bird

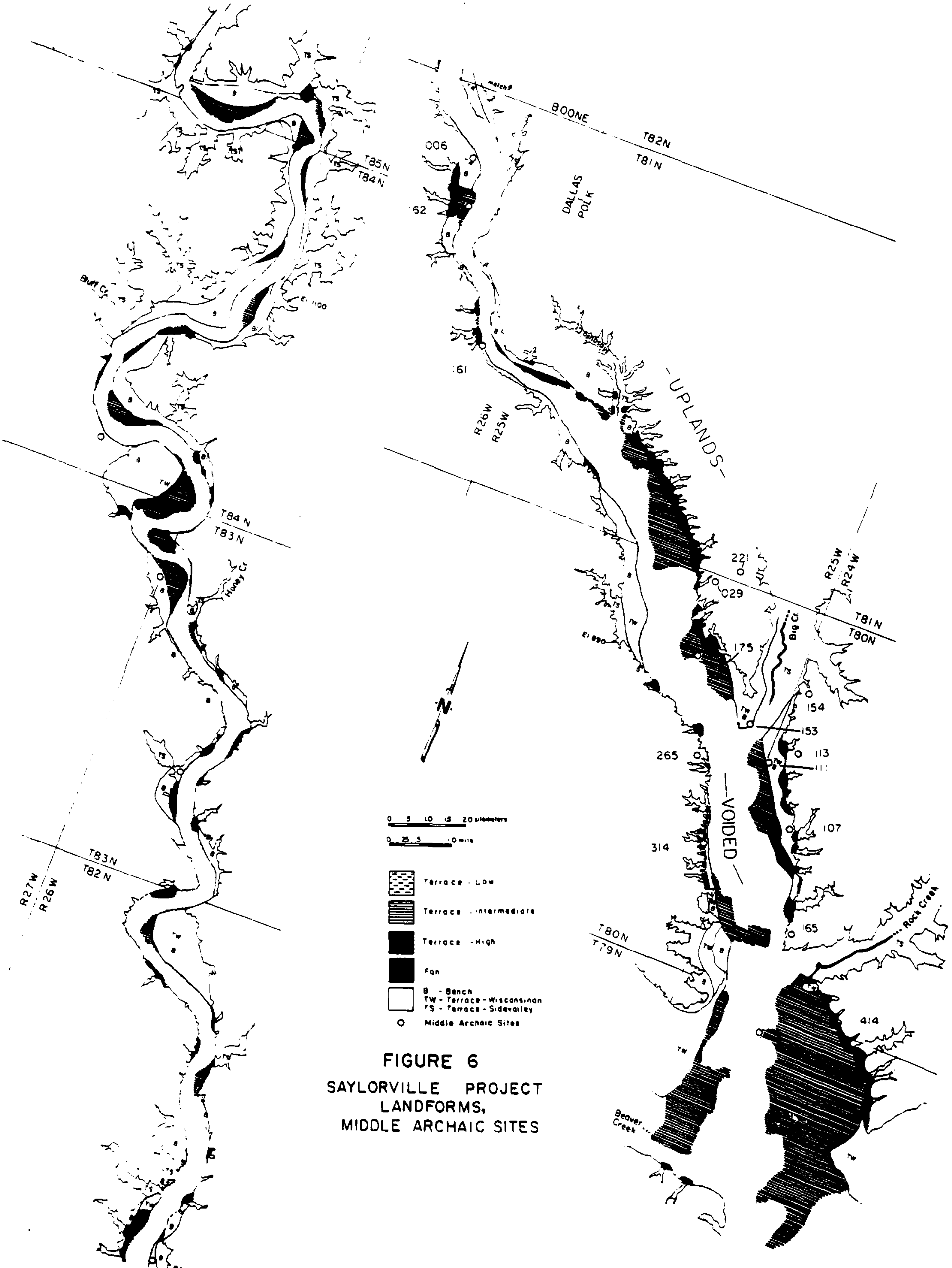

FIGURE 6
SAYLORVILLE PROJECT
LANDFORMS,
MIDDLE ARCHAIC SITES

bone. The buried soil dates to the fourth millenium B.C., while a date just above the soil is in the early second century A.D (Appendix E). If other Middle Archaic sites in the TH terrace prove to be as diffuse as 13PK414, the archaeology of this period in the Des Moines valley will be a difficult undertaking.

Late Archaic

This period dates from 4500 B.P. to 2350 B.P. The beginning date is an extrapolation from other sources (Brown and Vierra 1983; O'Brien and Warren 1983; Anderson, Shutler and Wendland 1980), and others might prefer an earlier date of 5000 B.P. The end date signifies the appearance of ceramics in the project area.

Projectile point types seem to proliferate during the Late Archaic. The side notched types of the Middle Archaic continued to be manufactured. Matanzas variants (SN4, 3) had broad, shallow side notches and coarse flaking. Other less common forms were Atalissa (SN2), Ft. Dodge (SN15) and possibly Conrad (SN16). The great change in point styles, however, comes in the appearance of several stemmed and lanceolate types. The most numerous were Table Rock Stemmed (St.1) and Poag (St.6), the former being finer chipped than the latter. Other stemmed forms included Apple Blossom Stemmed (St.3), Tipton (St.4), Stone Square Stemmed (St.8), St.10, Smith Basal Notched (SN3) and Merom (CN11) (see Appendix A). Lanceolate points conform to the Sedalia-Nebo Hill complex (L1), their smaller variants (L1a), and Karnack points (L2, 2a) and their smaller variants (L3, 3a). Another, thicker lanceolate form (L4) probably belongs with this group. There is a nagging question of whether Paleo-Indian lanceolates are mixed in category L1, because some L1 points have constricted bases similar to horizon 3 points from the Cherokee Sewer Site. Yet, none of the L1 specimens have ground bases in the manner of paleo-points. Another problem with the Late Archaic assemblage is that other chipped stone artifacts—gouges, Sedalia "diggers," chipped stone axes, various knife forms, scrapers—are not defined yet for the Saylorville area. Any of these artifacts that are present will fill out the prolific inventory for this period.

That the Late Archiac point inventory is diverse has been noticed by Joyer and Roper (1980:20) in the Truman Reservoir in mid-southern Missouri. They attribute this diversity to three causes: increased population and interaction; temporal differences; functional diversity. A denser population and increasing interaction between regional cultural variants has been suggested by other authors (cf. Cook 1976; Warren and O'Brien 1982b:392; Brown and Vierra 1983). Temporal variation in point styles also may explain some of the diversity, but like Joyer and Roper, this writer and others have observed that some point styles persist for a long time during the Archaic. Most sites do not have adequate stratification to organize point types in discrete levels and therefore clearly identify subtle stylistic shifts through time (cf. O'Brien and Warren 1983). Functional differentiation in Archaic point styles has been demonstrated by Ahler (1971), so that now we should anticipate that some forms functioned more often as knives rather than projectile tips.

If artifact diversity stems more from regional interaction and functional differences, then it should be the case that Late Archaic artifacts would have

been more specialized to make the resource extraction process more efficient. This reasoning is linked to another interpretation of the Archaic subsistence system: that it was beginning to focus on a narrower range of foods (Cleland 1976; Ford 1979) that later became "first-line" foods (Asch, Ford and Asch 1972) of the Woodland periods. A narrower range of resource exploitation meant that settlements were more permanent and situated within a day's collecting trip of major resource "patches" (Reid 1980:37; Warren and O'Brien 1982a:94; Brown and Vierra 1983:168-9). Brown and Vierra term this shift in residence a change from residential mobility to logistic mobility, meaning that as humans became more sedentary their daily activities became more logistically organized. In other words the focus on the most productive resource zones meant that humans had to develop more specialized uses of resources based on their abundance, productivity and reliability (Ibid.). This resource specialization materializes archaeologically in the appearance of more permanent habitation structures, processing and storage features, more structured organization within a settlement, a diversity of specialized artifacts and larger accumulations of particular food resources (Brown and Vierra 1983:168-173; Reid 1980:37; Cook 1976).

The shift in subsistence/settlement strategies described above happened in the Illinois River valley during the latter half of the Middle Archaic (II-III) period. By the Late Archaic period the Illinois peoples were beginning to mix intensive exploitation of floodplain resources with cultivation of plants. Farther west the shift toward more permanent seasonal settlements and focusing of resource exploitation seems to have happened during the Late Archaic period or later. This is what Warren and O'Brien (1982b) interpret from the Cannon Reservoir evidence and what Reid (1980) believes occurred in Nebo Hill culture of western Missouri. Farther west at the Coffey site in eastern Kansas it is not certain that this trend was even underway during the Late Archaic period. Here, Schmits (1978:166) characterizes the subsistence pattern as "diffuse," although focused on floodplain resources during the warm seasons. He also discusses the possibility that the season in the floodplain was paired with fall/winter hunting of bison in the prairies. So, we might infer that there was a general east-west cline in the development of intensive subsistence patterns and more permanent settlements. Cultural changes along this cline have been attributed to gradual population growth by most writers.

There is another variable in this interpretation of the chronology of Archaic culture change. That variable is the effect of the Hypsithermal; the effects of warmth and drying increase as one moves west across the Prairie Peninsula (cf. Wendland 1978). The Hypsithermal reduced the extent of forested environments in river valleys across the prairies (McMillan and Klippel 1981). Thus, an increasing Archaic population on the western prairies would have had less Woodland habitat to expand into. Stated another way, a lower population density on the western prairies relative to the Illinois valley would have resulted in some of the same subsistence pressures that have been described by Brown and Vierra for the Illinois Archaic cultures.

Comparisons with cultural developments in other parts of the Midwest do not tell us what happened in Saylorville Lake during the Late Archaic period. We can formulate hypotheses based on such comparisons, but hard data is needed to establish relevant interpretations for the project area. The only radiocarbon dates with associated material from the Late Archaic period came

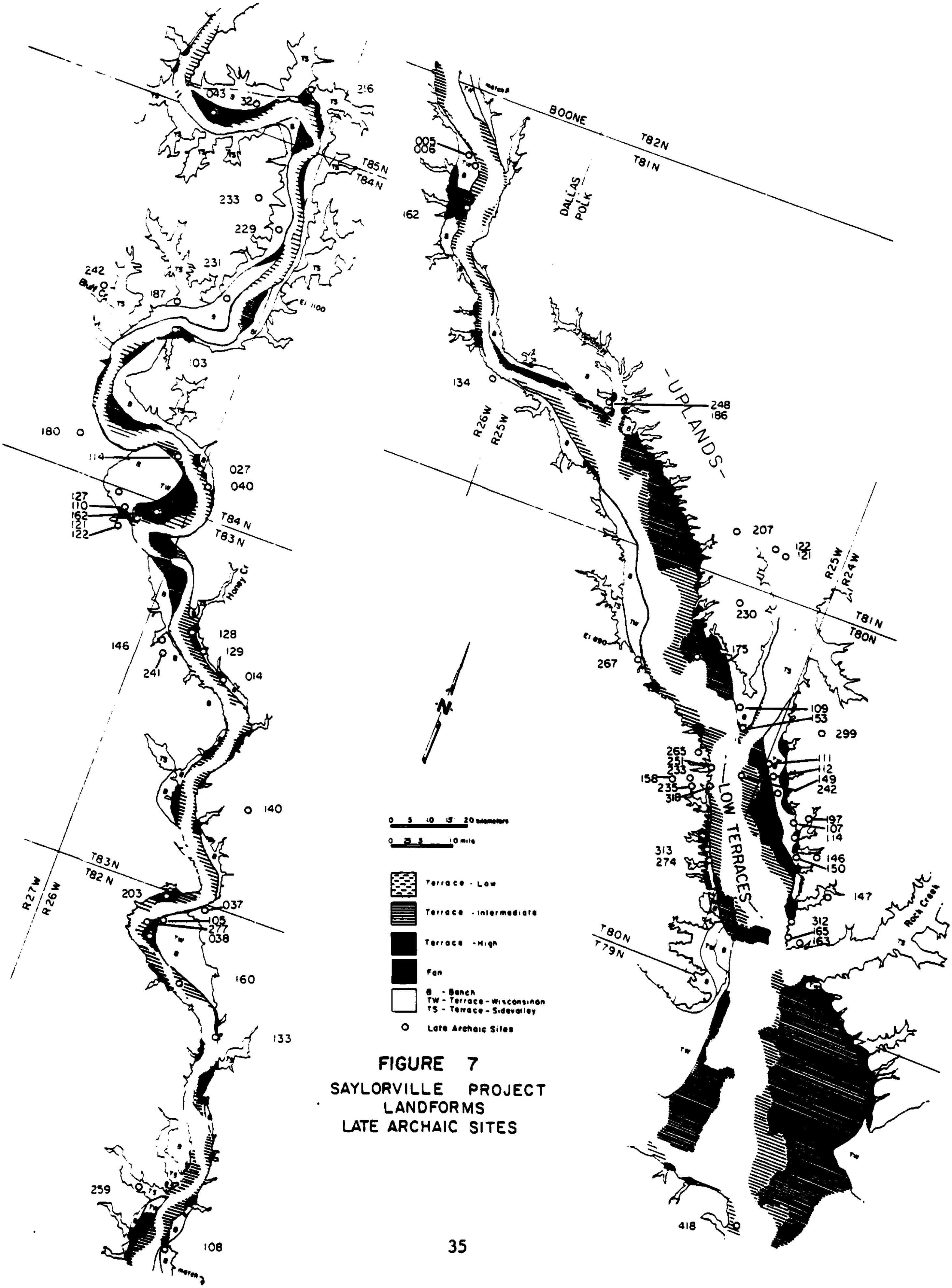

FIGURE 7
SAYLORVILLE PROJECT
LANDFORMS
LATE ARCHAIC SITES

from sites 13PK149 and 13BN103. Site 13PK149 (Timberlake 1981; Osborn and Gradwohl 1981:131) contained a buried occupation (level III-6) dated 3015+-65 B.P. (1015 B.C.*; Wis-905). The remains of pits within a possible structure, mammal and aquatic food resources and three examples of point type SN16 were recovered from this component. At 13BN103 pit features with domestic trash were found in a buried soil approximately 5 feet below the modern surface (Osborn and Gradwohl 1981:542). Point type L1a also was associated with this occupation, which yielded a radiocarbon date of 3973+-80 B.P. (2023 B.C.; Wis-1220). Sites 13PK149 and 13BN103 are on TI terraces today. At the time of occupation they were situated in the floodplain near the river channel.

There are many more Late Archaic period sites (70) than Middle Archaic period sites (20) in the project area (Figure 7; Archaic sites of unspecified period are not mapped). Of course almost all of this site information is from surface data. Simple numbers mean little, except that the numerical increase in sites is more than three-fold. The biases against locating both Middle and Late Archaic sites are about the same; i.e. Middle Archaic sites tend to be buried in TH terraces, while Late Archaic sites are buried in TI terraces. Given equal biases in locating sites and the increase in Late Archaic numbers, it seems logical to hypothesize that Late Archaic peoples were more numerous. Their sites generally have denser artifact scatters, and their sites occur on all types of landforms throughout the reach of the valley in the project area. An increase in numbers and distribution of Late Archaic sites is something that Cook (1976:119) noticed in the lower Illinois River valley (i.e. a change in settlement pattern from the Helton to Titterington phases). But, he cautions that the spread of Titterington settlements was not the result of changes in subsistence strategies, which remained similar for Helton and Titterington phases. Rather, Cook hypothesized that Late Archaic peoples merely moved with the expanding Woodlands after the Hypsithermal had ended and the climate ameliorated.

It is clear from Cook's reasoning that we must investigate the subsistence/settlement systems of both the Middle and Late Archaic periods in order to know when (and why) significant cultural changes occured. It was change in the Archaic periods that resulted in later cultural specializations of the Woodland period.

Early Woodland

The time span when ceramic vessels began to be used in the central Des Moines valley was 2350-2050 B.P. (400-100 B.C.). Because of radiocarbon dating and comparisons with other areas (see below), this proposed time span for the Early Woodland period is fairly secure. What remains to be secured about this period is its classification within Midwestern culture systems and rationalizations about why an Early Woodland period was culturally distinct from the Late Archaic period. At present the Early Woodland is one of the most vaguely defined culture periods throughout Iowa (see RP3 in E. Henning 1982).

* corrected C14 dates are used in the text; see Appendix E

Recently, Patrick Munson (1982) has published a hypothesis which has clarified the standing of the Early Woodland period. He reasons that there were two traditions dating to the Early Woodland period. The Marion phase is minimally defined by Marion Thick ceramics and Kramer Stemmed points, and it develops into the Morton/Caldwell phase, the earliest manifestation of the Havana tradition in Illinois. Morton is typified by a fully developed Havana lithic assemblage and Morton Incised and Sister Creeks Punctated pottery. The other Early Woodland manifestation is Black Sand as defined by Black Sand Incised and Liverpool Cord-marked ceramics as well as contracting stemmed points. Munson (op. cit.:10) envisions the Black Sand tradition extending farther west of the Mississippi River valley than the Marion phase. This would mean that the Saylorville area lies outside the Marion distribution but is within the limits of the Black Sand tradition. The existing radiocarbon dates for Black Sand are essentially coeval with the proposed time span of the Early Woodland period in Saylorville Lake, while dates for the Marion phase are one or two centuries earlier. Munson extrapolates the beginning of the Morton/Caldwell phase to 300-400 B.C. (op. cit.:3).

The data from Saylorville Lake support Munson's interpretations regarding Black Sand distributions. The predominant Early Woodland point style is straight stemmed, i.e. Kramer (St.5; Appendix A) and probably also Poag (St.6). There are not enough stratigraphic associations to place other styles in this time period, but some lanceolate forms (L3, 3a, 4) and other untyped corner notched styles may turn up in future excavations. The ceramics of the early Woodland period are given a new type name, McBride ware (Appendix B). This ware has a coarse paste tempered with a variety of grit and sand. There is only one ceramic type named at the moment, but an undecorated, cord roughened version should appear when large ceramic samples are eventually obtained. The existing type, McBride Trailed, has a rimless jar form with steep shoulders and round, often extruded lips. A row of embossing (occasionally punctating) is positioned near the lip. McBride Trailed decoration consists of numerous parallel lines trailed in soft paste. Exterior surfaces are corrugated by deep cord roughening which is vertically oriented on the upper vessel and bends to oblique below. Interior surfaces are smoothed. McBride Trailed compares favorably with Black Sand Incised (Griffin 1962) and with wares to the north (Fox Lake ware, Hudak 1976; Benn 1982), west (Crawford ware, Benn n.d.) and east (Prairie phase; Theler 1983).

No Marion ceramics have been found in the Saylorville project. The instances of McBride ware and/or stemmed points in sites are numerous, but only one site produced acceptable artifact associations and a date. Site 13PK315, investigated by Emerson and Finney (1984:78-87), was on an alluvial fan/Wisconsinan bench landform now being eroded at the lake shore. At depths between 15-30cm, Emerson's crew found several McBride Trailed sherds with carbon that gave a date of 196 B.C. (2146+-330; Beta-10048). Surface finds from the site include at least 5 stemmed points (St.2, 7, 9) and 4 corner notched points (CN2, 5, 6 or 7), all but CN2 easily conforming to an Early Woodland/early Middle Woodland context. The occurrence of Kramer points and McBride pottery in the reservoir demonstrate that there are at least 32 other Early Woodland sites (Figure 8). These sites are scattered throughout the entire reach of the project, but a majority are concentrated within a five mile span of valley near the mouth of Big Creek in Polk County. This concentration of Early Woodland settlements may be a real cultural pattern and

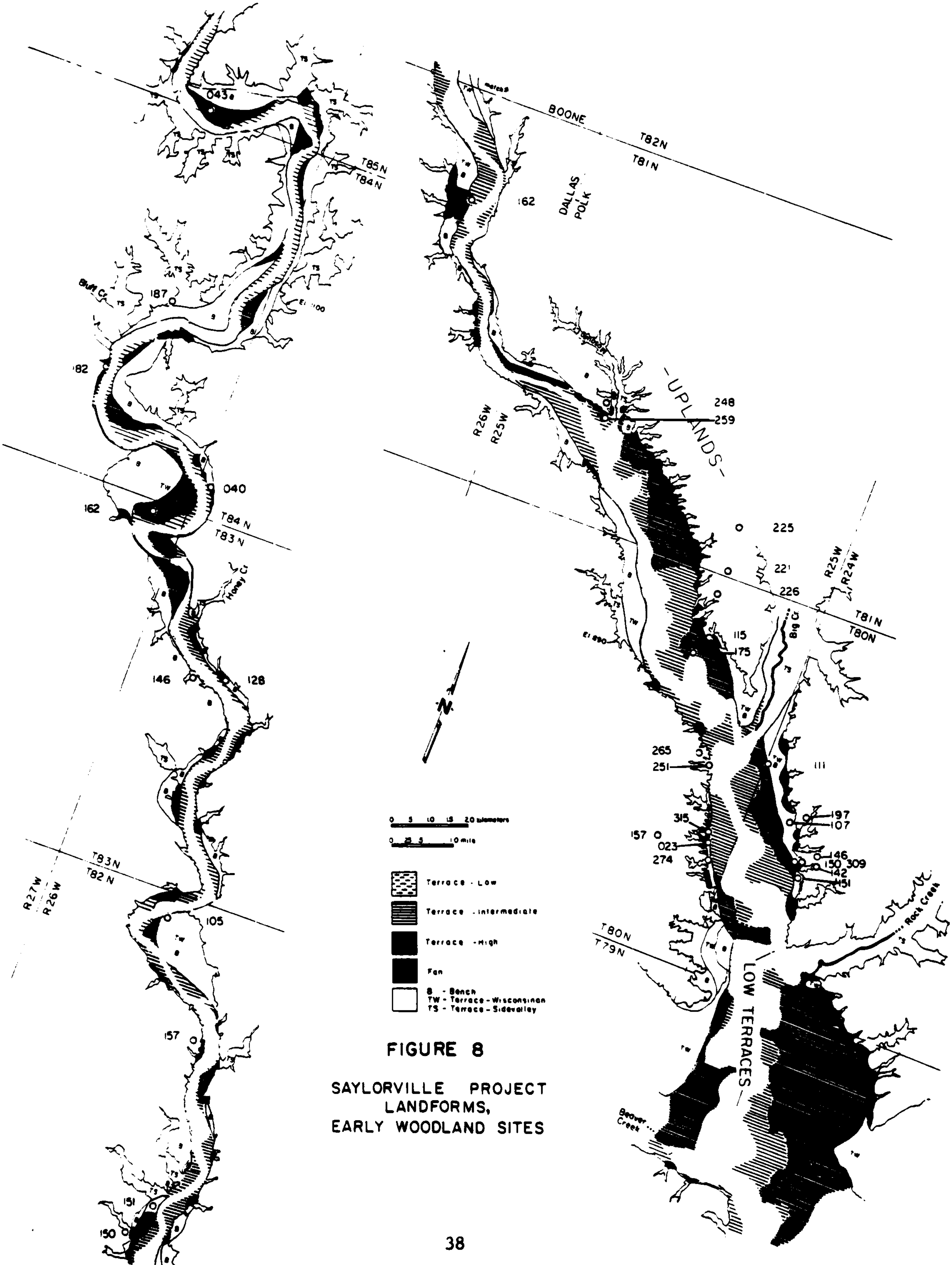

FIGURE 8

SAYLORVILLE PROJECT
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EARLY WOODLAND SITES

not a figment of collecting bias. All but one of these 19 sites are positioned on fans, benches or uplands--landforms that were adequately covered by surface survey upriver as well. The manifestation of Early Woodland, especially the enclave around Big Creek, is named the Polk City phase.

One potential bias that is apparent in the Early Woodland site data is the absence of sites on TI terraces and in sidevalleys. By comparison, there are five Late Archaic sites in sidevalleys and three on TI terraces. The Late Archaic was a longer period, therefore there may be more sites of this period in the sample universe. Yet, Early Woodland followed the Late Archaic period; the former should be superimposed on the latter and therefore easier to locate by surface survey, even on TI terraces. The really troublesome point about Early Woodland site distributions is that elsewhere Black Sand sites are confined to bottomland locations, usually low, sandy terraces (Struever 1968:292; Asch, Farnsworth and Asch 1979; Munson 1982; Ozker 1982:167; Theler 1983; Benn n.d.; 1984b). Munson (op. cit.:12) suggested that Black Sand floodplain settlements represented seasonal base camps for people who foraged in other habitats during other seasons. In Saylorville Lake we need to know if similar floodplain camps occur on the TI terrace and therefore supplement what appear to be base camp settlements on the higher benches and fans.

Descriptions of Early Woodland subsistence/settlement patterns outside the Illinois River valley are remarkably uniform. From eastern Michigan (Ozker 1982:167) to the American Bottoms (Fortier, Emerson and Finney 1984), northeastern Missouri (Warren and O'Brien 1982a,b) and southeast Iowa (Fokken and Finn 1984:6-3; Benn 1984a), the Upper Mississippi River valley (Van Dyke, Overstreet and Theler 1980; Theler 1983) and to western Iowa (Benn et al n.d.), authors describe the Early Woodland pattern as primarily small, seasonal settlements on low terraces near the main channels of the river. Subsistence was based on intensive processing of vegetable foods and hunting or collecting a wide range of mammals, birds and aquatic resources. Mussel procurement sites are a primary aspect of the Early Woodland, Prairie phase in the Upper Mississippi River valley (Theler 1983). Exotic cultigens, like cucurbits, had been integrated with the production of wild vegetable foods. Evidence of storing/processing features (pits, roasting pits) occurs. Mound burial also seems to be present in some areas, while in others only burials in habitation areas have been found. There is no evidence for subsistence patterns in Saylorville Lake, but Early Woodland sites do occur on terraces/benches/fans within the valley as well as on upland summits in the manner of the Late Archaic settlement pattern. Warren and O'Brien found a similar settlement pattern in sites of their Developmental Stage II (i.e. Late Archaic and Early Woodland periods; 1982b:94).

One of the key elements in researching the subsistence/settlement patterns of the Early Woodland (and Late Archaic) has to be paying more attention to one of the most mundane of artifacts, fire-cracked rock (House and Smith 1975). Rock that has been altered by heating is conspicuous throughout the Saylorville project; it is <u>more</u> common than chert flakes or pottery sherds on many sites. Yet, fire-cracked rock is practically ignored by some previous investigators. Heated rocks as artifacts provide several kinds of information. First, it may be the only surficial evidence of an aboriginal human presence. Second, fire-cracked rocks often are grouped as features--roasting pits in Saylorville. Rock features represent one of the processing steps of the subsistence system. Additionally, heated rocks may be

recycled as tools for other functions like scraping, abrading, grinding, etc. (Lovick 1983). Fourthly, large amounts of heating rocks may be indicators of (cold) seasonal occupations (Ozker 1982:130). Finally, if heated sufficiently, fire-cracked rocks can be dated by the thermoluminescence method, thus providing a way to date sites otherwise lacking in sufficient carbon deposits or diagnostic artifacts. The problems with studying fire-cracked rocks, of course, are that they are bulky for storage and transport, and the information contained in them is cumulative; i.e. patterning in the use of rocks is recognized by studying many samples from different sites.

Middle Woodland

The Middle Woodland period in the Saylorville project is dated from 2050-1550 B.P. (100 B.C.-A.D.400). All of the cultural material of this period is placed in one category, the Van Hyning phase. This phase is named for Thompson Van Hyning, the excavator of the Boone Mound.

The Middle Woodland manifestation in the central Des Moines River valley has been viewed as a western variation of the Havana tradition and an extension of the Hopewell Interaction Sphere (Osborn and Gradwohl 1981:637; Osborn and Gradwohl 1983:vol. I p. 280; Henning, Saunders, Donham and Mandel 1982:11-12). Like their contemporary counterparts at Kansas City (Wedel 1943), the central Des Moines Woodland population has been viewed as "...either fairly fresh Hopewellian migrants from the east, or else their potters produced passable provincial plagiarisms of the <u>real</u> wares from the main 'interaction sphere.'" (Gradwohl 1974:94; emphasis added) This cultural manifesto that equates diffusion of artifact styles with the appearance of indigenous culture systems is blatantly stated by Patrick Munson. Speaking of the north and northwest variations of the Black Sand tradition, Munson says:

> By Middle Woodland times...this tradition had retracted to the north and northwest, where its bearers paticipated (sic.), weakly and primarily as recipients, within the Havana-Hopewell sphere of influence, comparable in this regard in many ways to the situation with the Crab Orchard Tradition that lies to the south of the Havana Tradition. (1982:12)

I have argued elsewhere (Benn 1983) that it is one thing for archaeologists to demonstrate diffusion of artifact styles to a society on the "edge" of a major florescence like Hopewell and quite another matter to assume acculturation of socio-economic systems and ritual (cognitive) meanings by "peripheral" groups. A more considered approach to the problem of interpreting the nature of Havana-Hopewell influences is required (cf. Stoltman 1979; Vehik 1983; Emerson and Finney 1984:119).

A reading of the Chillicothe Conference volume on Hopewell Archaeology (Brose and Greber eds. 1979) leaves one with the clear understanding that socio-economic interaction was the animating process in Middle Woodland period societies. The most concrete manifestation of Middle Woodland social and economic interaction was the mortuary, a term that designates not only the grave site but also the facility for processing the remains of dead people (Binford 1971). The communal mortuary appeared during the Helton phase in the

Illinois and Mississippi River valleys after circa 6000 B.P. (Charles and Buikstra 1983) and was employed in mound form throughout the Woodland and Mississippi periods. The Archaic mortuary was situated on the blufftop, a positioning that seems to express territorial (resource) control (op. cit.:130) for the group constructing and maintaining such a facility (for Late Woodland, see Mallam 1976). A similar Late Archaic mortuary was found at the Lewis Central School site on the Missouri River in western Iowa (Anderson et al 1978); it dated 2815+-80 B.P.(865 B.C. uncorrected; UCLA-2105). In the Archaic facilities (pits) and later Middle Woodland crypts (in mounds) the emphasis in ritual seems to have been on the communal aspects of the burial program, since burial offerings are scarce in the Archaic facilities (Charles and Buikstra 1983:134) and a cross-section of the whole population is found in Middle Woodland mounds (Brown 1979:212). However, the Archaic pit and Woodland crypt are places for final disposition of the dead but are not necessarily the same places where dead bodies were prepared for burial.

During the Middle Woodland period a second type of mortuary facility appeared: the charnel house (Brown 1979). This was a structure housing the remains of the dead and facilities for processing bodies. Additionally, the charnel house was spacious enough to accomodate displays of human remains and symbols of their rank or prestige as well as to provide room for people participating in socio-political rituals associated with death (op. cit.:212-215). Displays of a dead person's status have the purpose of reinforcing the ascribed status of the new generation of leaders in a community, and therefore such displays imply the existence of more complex (i.e. ranked; see Braun 1979) societies (Brown 1979:212). Brown hypothesizes that Ohio Hopewell with charnel houses was a more complex and perhaps populous manifestation than the Illinois Havana-Hopewell, where communal burial crypts were used.

Setting aside this body of theory for the moment, let us consider the mound data from the Saylorville project. There are 17 known or reported mounds or mound groups (Figure 9). All but one of the mounds have never been professionally excavated, and many mounds have been destroyed. Twelve of the mound groups probably contained low conicals, while four may have been linears and one was the huge Boone Mound (Ashworth and McKusick 1964; Gradwohl 1974:94). The ages of the mounds are uncertain, although linear mounds and low conicals tend to belong to the Late Woodland period in eastern Iowa (cf. Mallam, Bettis and Peterson 1979). Two conical mounds outside the project area (13MA20, 13PK33) were excavated by ISU crews and found to contain secondary burials and a discontinuous "stone pavement" (Gradwohl 1974:94). The Saylorville project mounds have an interesting distribution. Two groups are situated in Polk County, while 15 of 17 groups are located in Boone County within a linear distance of five miles upriver and seven miles downriver from the Boone Bottoms. It is in the Boone Bottoms where the largest earthwork, the Boone Mound (13BN29), is located on a TH terrace. This was a huge structure: 130ft N-S, 160ft E-W, 15ft 6in high (39.5x48.8x4.7m). The Boone Mound was excavated in 1908 under the direction of Thompson Van Hyning (1910a,b; Harlan 1908). By current standards the digging was rapid and crude, and the detailed notes of the work have been lost (see Gradwohl 1975:220-1). Nonetheless, newspaper photographs and published summaries by Harlan and Van Hyning give a reasonable account of what was in the mound.

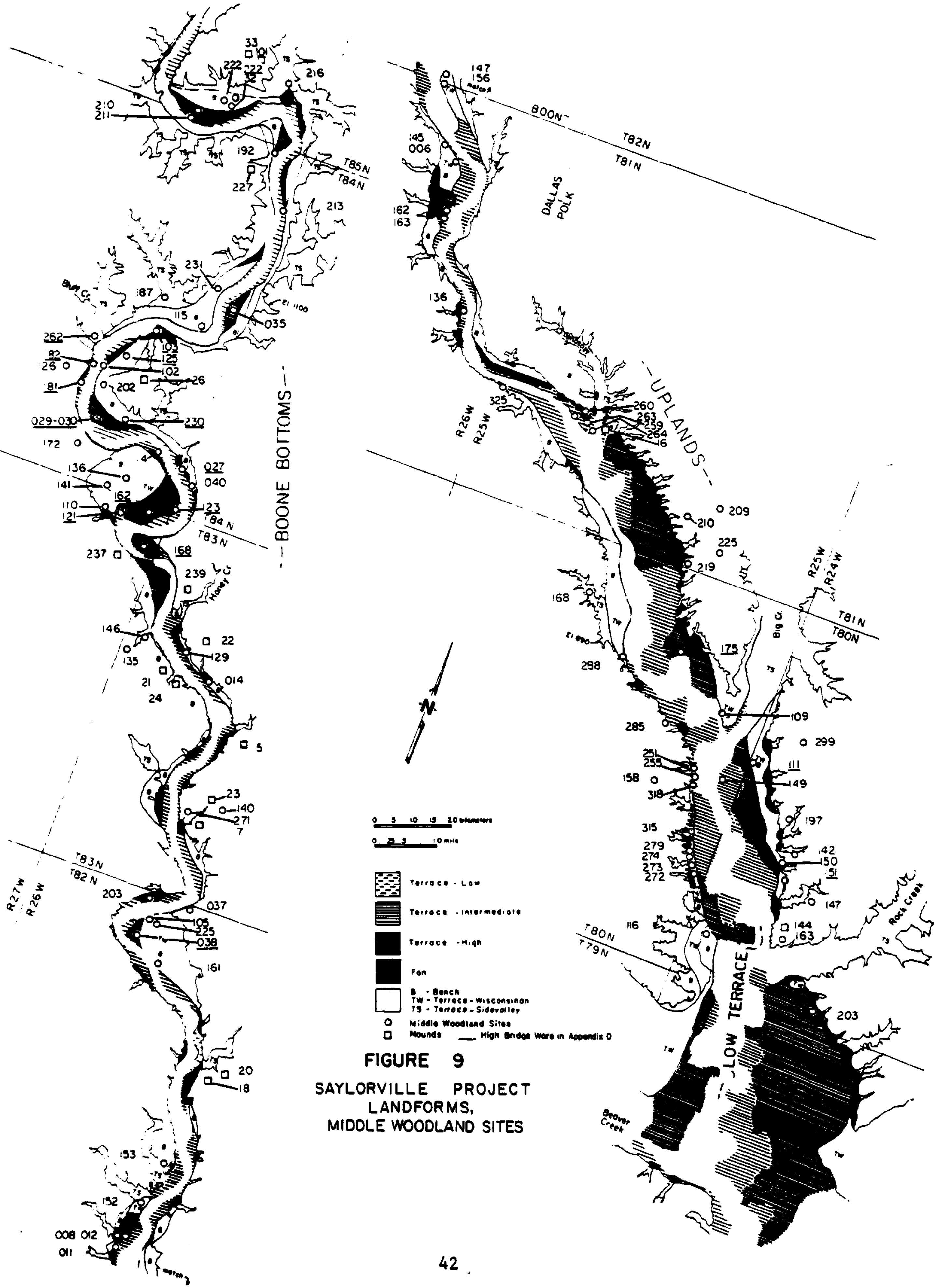


FIGURE 9
SAYLORVILLE PROJECT
LANDFORMS,
MIDDLE WOODLAND SITES

The Boone Mound (Van Hyning 1910a,b; Harlan 1908) was composed of stratified fill scraped from the surrounding village midden but containing numerous mussels shells unlike the midden soil. Mussel shell occured in sheets and piles as if intentionally placed as a ritual deposit. Inside the mound was a 26x18ft (8x5.5m) limestone slab floor with irregular edges. This floor was raised 18in (46cm) above the terrace surface. Placed on this limestone paving was a 16x10ft (4.9x3m) enclosure made of logs with upright limestone slabs set against the outside (20-24in, 50-61cm high). Smaller stone enclosures large enough for a body were positioned at the four corners of the larger enclosure. The larger enclosure had had a covering of wooden poles overlain by E-W lines of glacial boulders. Many fragments of rodent gnawed human bone were found broadcast across the limestone paving. Holland's (n.d.a) recent analysis of the human remains, now housed in the State Historic Department in Des Moines, recognized at least five individuals of the +25 reported by the excavators. At least two skulls with cradle board deformation of the forehead were present. Another aspect of the mound was the presence of heaps of ashes on the limestone paving. Aside from midden materials, no unusual artifacts were found.

The Boone Mound was so large and complex a construction that it bears no resemblance to other mounds in interior Iowa. The nearest comparably sized mounds are ones at Toolsboro located along the Mississippi River in southeastern Iowa. Recalling the discussion of the Hopewell mortuary, the central features of the Boone Mound bear striking similarities to aspects that Brown (1979) describes as "crypts" and possibly "charnel houses." Certainly, the central log/limestone enclosure looks like a crypt, although it does not seem to have contained whole skeletons. The crypt had a wood and stone cover to secure its contents against disturbances by scavengers. The crypt and earthen mound above it were raised on top of the sub-mound structure. The much larger limestone floor pavement on a raised platform is not a feature of crypt burials and could not have served as a receptical for protecting human remains. Rather, ritual deposits of ash and scattered human remains were placed on the pavement when the mound was raised. One can only speculate that "ash heaps" (Van Hyning 1910a:162) might have included cremated human remains. Human bone fragments are reported to have been heavily gnawed as if they had been exposed to rodent activity for long periods. Another aspect of the Boone Mound is its setting--in the midst of the Middle Woodland, Gracie Paulson village (13BN30) on a terrace, not on a blufftop. Brown stresses that the Ohio Hopewell charnel house was a rectangular structure, i.e. a structure raised at additional "costs," because cornered buildings are more difficult to built and and because they provide a format conducive to the display of ranked materials (Hunter-Anderson in Brown 1979:212). The paved floor in the Boone Mound was a rectangular form. Unfortunately, the excavators did not look for structural features such as post molds, so we cannot know that a structure existed. But, the pavement was on a platform for whomever might witness the mortuary rituals and procedures that took place on the platform.

The Boone Mound as a "charnel house"/crypt is unique in the central Des Moines valley. It must have been the focal point of a large population which contributed labor to build it and who participated in communal mortuary rituals at the platform. The only data we have for the settlements of this Middle Woodland population is the distribution of High Bridge ceramics in the 93 known Middle Woodland sites. The ceramic distributional data is not statistically verified yet, but the proveniences of High Bridge ceramics

analyzed in Appendix B reveal a heavy concentration of sites in Boone County. Specifically, 12 of 16 sites (75%) with conspicuous amounts of High Bridge pottery are located in the Boone Bottoms within a two mile radius of the Boone Mound (Figure 9). Four other sites with enough High Bridge ware for meaningful analysis are located farther downriver (e.g. 13BN38 about 8mi; 13PK111, -151, -175 in Polk County), but the downriver sites have much small assemblages of a few sherds. The large Middle Woodland sites in or near the Boone Bottoms represent the focal point of the Van Hyning phase; the locale of densest population and presumably the most intensive ritual activity.

The ISU test excavations of Middle Woodland sites have been limited in scope (e.g. 13BN30, -38, -103, -168, -182; Osborn and Gradwohl 1982) and have produced only broad patterned data. Generally, the large sites that yielded substantial pottery also contain trash pits and roasting features, deer and other mammal bones, the remains of birds, turtles, fish and mussels and a great deal of fire-cracked rock and lithic debris. These sites functioned as base camps, perhaps as year-round occupations. They are situated on the TH terrace, fans or highest TI terraces adjacent to the broadest expanses of floodplain. This is not to say that Struever's (1968) model of intensive floodplain harvesting of resources was specifically operating in the central Des Moines valley for only the Middle Woodland period. A similar subsistence pattern probably was employed during the Late Archaic period (see Osborn and Gradwohl 1981:639). In the uplands and other places there are many other sites with small Middle Woodland assemblages for which we know next to nothing. Downriver from the Boone Bottoms some sites have yielded a few body sherds and/or a diagnostic projectile point that are indicative of the Middle Woodland period. Many of these sites are sufficiently deflated that one can be certain no dense village midden exists below the surface. These small sites seem to have been seasonally occupied by either of two populations: small bands on seasonal forays from large, upriver villages; or a more dispersed, loosely organizing population on the periphery of influence from the Van Hyning phase population. In this regard it is interesting to note that the Early Woodland, Polk City phase is concentrated in Polk County, while the Middle Woodland, Van Hyning phase in centered in Boone County. Perhaps the two phases <u>partially</u> overlap in time and do represent different populations (cf. Munson 1982).

The diagnostic artifacts upon which site distributions are based are pottery and a several types of projectile points (Appendix A). Stemmed point styles probably continued to be manufactured through the Early and Middle Woodland periods: the Adena (St.7), Dickson (St.9) and perhaps Lost Island (St.11) types. Two Dickson points are manufactured from Knife River flint, which must come from the North Dakota quarries. The Tama side notched type (SN11) may belong in the Middle Woodland period, but this is not certain. The majority point styles of this period are corner notched. The large, wide bladed type (CN2) has a form similar to Snyders and Manker from Illinois (White 1968), although specimens with triangular blades are like the Rice Corner Notched style of the Archaic periods. Slightly smaller Manker Corner Notched points (Figures A.6, A.13) are represented by only two specimens, one of which is made of Knife River flint. Two other uncommon types are Norton-like points (CN8) and Okoboji (CN10). The dominant point forms are moderately large, ovate bladed styles (CN4, Gibson-CN5) and triangular bladed forms (Creston-CN, Pelican Lake-CN7). Creston points have basal grinding and narrow blades than the Pelican Lake type, which lacks grinding. All of the

Middle Woodland points are sized so that they functioned as dart tips (in addition to other possible cutting functions) for use with the atlatl, a pattern consistent with other contemporary societies in the Midwest.

The occurrence of three points made of Knife River flint is an interesting aspect. This rootbeer colored flint was one of the items that circulated in the Hopewell Interaction Sphere (Struever 1964). Another Interaction Sphere item, obsidian from the Yellowstone Park deposits in the Rocky Mountains, was found in the form of waste flakes at 13BN30 and 13BN123 (Osborn and Gradwohl 1982:283).

Table 1
Exotic Chert Types
on Hafted Bifaces
Saylorville Project Sites

period	no. bifaces	material* (direction) Winterset (S)	Warsaw (SE)**	Burlington (SE)	Maynes Cr. (E)	Tongue R. (N)	Knife R (NW)	% exotic
P-Indian	4	2	-	-	-	-	-	50
M. Arch.I,II	18	1	1	-	1	-	-	17
M. Arch.III	45	2	-	-	4	2	-	18
L. Archaic	66	11	4	1	6	1	-	35
E. Woodland	24	1	2***	1	1	-	2	29
M. Woodland	64	5	1	2	7	1	1	26
L. Wood/Gr. Oasis/Oneota	86	7	-	-	-	-	-	8
total	307							

*see Morrow 1984; **chalcedonic type, except in ***1 tabular type

The importation of chert types is another indication of human interaction in prehistoric Iowa. Initial analysis of chert types represented in pointed/hafted bifaces (Table 1) shows a considerable increase in imported chert from south and east of the project area beginning in the Late Archaic period (35%). The higher frequency of imported cherts persists through the Middle Woodland period (26%), then drops dramatically after ca. 400-700 A.D.

Other stone artifacts that typically occur in Middle Woodland sites include hematite celts, three-quarter grooved axes, sandstone abraders, drills, graver/perforators, bifaces and end scrapers (Osborn and Gradwohl 1981:637). These items also occur in Archaic and later Woodland contexts. Additional analysis of extant collections will be needed to identify which of these tools are characteristic of what culture periods.

Middle Woodland people made a variety of ceramic types belonging to two wares (Appendix B). High Bridge ware had the longest time span of manufacture. These vessels were large sub-conoidal jars with a slight neck constriction and tall, vertically oriented rims. Lips were tooled smooth and tend to be flat, but not beveled. All exterior surfaces were initially cord roughened, and up to half were subsequently smoothed to a plain surface. A large majority of High Bridge vessels have low relief embossing 15-19mm below the lip (i.e. lower than McBride ware). Most vessels are decorated with combinations of cord-wrapped stick stamps, bold-toothed dentate stamps and/or zoned trailing. An early

High Bridge type probably synonymous with Sister Creeks Punctated in Illinois (Griffin 1952) is High Bridge Punctated; this type retains some ware and decorative characteristics of McBride ware. A later type not present in Illinois is High Bridge Trailed, a type with zones of parallel straight or curvilinear lines trailed over cord roughening in soft paste. This type is similar to the southern Minnesota type, Fox Lake Trailed (Hudak 1976; Benn 1982). Other types—High Bridge Cord Roughened, Plain, Brushed and Stamped—have synonyms in the Illinois Havana pottery sequence (Griffin 1952) but lack bevelled lips, ovoid stamping and large amounts of zoned stamping and trailing. The other ceramic that was manufactured at the end of the Middle Woodland period is Madrid ware. (This ceramic group will be described in the next section.) The Madrid ware was a development out of High Bridge ware, but the former has more curved rims and considerably less decoration.

In pottery there are two additional indicators of inter-regional interaction. The rim of a Hopewell Zoned vessel (see Hopewell Ware, Appendix B) that must have been made farther east was found at 13BN262. Another rim from 13BN182 (see Osborn and Gradwohl 1982:Fig. 96d) is typed as High Bridge Cord Roughened, but its horizontal cord roughening, upper rim stamp and punctate row identify it as Valley ware from the Missouri River basin in western Iowa (Benn ed. 1981). Both the Hopewell and Valley ceramic types date to the first three centuries A.D. Only these two specimens and High Bridge Trailed can be taken as evidence of influences from regions other than the Mississippi and Illinois River valleys, i.e. the Havana tradition.

Current radiocarbon dates from the project area (Appendix E) indicate that the florescence of the Van Hyning phase occurred in the first three centuries A.D. There are troublesome inclusions of Late Archaic and Late Woodland components in Middle Woodland sites, however. Such inclusions confused the association between diagnostic artifacts and radiocarbon dates. A mixed midden at 13BN30 produced a (too) early date of 2368+-60 B.P. (Beta-2810). The Middle Woodland midden at 13BN121 was dated at 1583+-55 (Wis-517) and 1657+-55 B.P. (Wis-630). A similar midden at 13BN182 dated 1819+-60 B.P. (Beta-2811) and a much earlier 2599+-80 B.P. (Beta-2812). The latter date is too early, as a date of 932+-60 B.P. (Wis-906) from 13BN123 is equally too late. Madrid ware from stratified 13PK149 was associated with three dates in a close span of A.D. 360-393 (Wis-899, -902, -904). Madrid ware should post-date the final stages of the Boone Mound construction, since it is not a major component of the mound fill. The transition period between the Early Woodland, Polk City phase and the Van Hyning phase probably during the first century B.C. remains to be dated and analyzed.

An overall impression of the Middle Woodland period in the central Des Moines valley is that the population had grown to a level sufficient to stimulate the formation of complex social interactions on at least a local scale. Local socio-economic interactions were structured in the general form of the Hopewell ritual system, because local residents were in touch with the pan-Midwestern, Hopewell Interaction Sphere. People in the Des Moines valley were especially aware of Middle Woodland societies in the Mississippi valley and in the large valleys of eastern Iowa (i.e. Cedar, Iowa, Skunk Rivers); virtually all of the latter are undocumented by archaeologists (cf. Weichman 1974). The only massive evidence of this social interaction system is the Boone Mound, which probably was a contemporary of Havana-Hopewell and the Middle Woodland phases in eastern Iowa. On the surface it would appear that the essence of Middle Woodland social interaction changed after the Boone Mound was finished, because no similar structures were raised subsequently. On the other hand the memories of morturary activities conducted on the platform and the visible memorium of the mound itself must have inspired generations of people after its completion. Smaller mounds may have been constructed along the river bluffs to renew this memory well into the Late Woodland period.

early Late Woodland

This period is given preliminary dates of 1550-1250 B.P. (A.D. 400-700). The initial date of A.D. 400 is arbitrary because the Middle-Late Woodland transition was gradual. Likewise, the end date of A.D. 700 is arbitrarily defined by the appearance of cord decorated ceramics. When more is discovered about the cultural processes of this period, its chronological limits might be changed slightly. When this document was written, the early Late Woodland period had not been defined in previous Saylorville Lake syntheses (Gradwohl 1975; Osborn and Gradwohl 1981). The manifestations of this period in the project area are classified as the Riverbend phase.

The assemblage of hafted bifaces for the early Late Woodland period is poorly defined. Level 4 at 13PK149 is the only stratified site with a component of this period, but here later Woodland material was mixed with earlier Woodland as well. The dominant point styles of the period seem to be medium to small side notched forms, particularly the Tama (SN10) and Besant/Reed (SN12a,b) types (Appendix A). Other minor forms of the period might be Okoboji (CN10), Little Sioux (SN10) and Lost Island (St.11, Figure A.6). A stemmed form (St.2) similar to Steuben Stemmed (White 1968) also dates to this period. One trend in most of these point styles is a tendency toward thinness, i.e. to have relatively low thickness/width ratios (e.g. .28-.33 for SN12a,b compared with .53 for L1). Small sized points are thought to have functioned as arrowheads.

The only pottery of the early Late Woodland period is Madrid ware (Appendix B). It was manufactured as early as the mid-fourth century A.D. (see preceding discussion for 13PK149, DUII; see also Appendix E), but there are no terminal dates for the ware. Madrid ware is similar to High Bridge ware. Without statistical analysis many body sherds of the two potteries cannot be separated. Madrid ware differs in having more curvature in the rim, which tends to be flared. Madrid vessels also have conspicuously less decoration and almost no embossing. When present, decorations are confined to the lip except for a few chronologically early cases of body stamps and trailed designs. The several types in Madrid ware—Cord Roughened, Plain, Punctated, Stamped, trailed variety—parallel the diversity of types in High Bridge ware. This implies a direct developmental relationship between the two wares.

The potential inter-regional relationships of Madrid ware border on speculative because they span long distances. Looking to the west in the Missouri River basin the contemporary pottery was Held Creek ware (Benn ed. 1981). This ware has similar categories of decoration although it is more spartan than on Madrid ware. On the Prairie Lakes region north of the project area the dominant potteries are Arthur Cord Roughened and two Lake Benton types (Anfinson ed. 1979; Benn 1982). The oriented cord roughening on the Arthur type is not similar to Madrid types. The Lake Benton Cordwrapped Stick type is similar to Madrid Stamped in the use of the concept of zoned decorations, but it is not similar in the attributes of its tall, curved rims and bands of cord-wrapped stick stamps in complex patterns. The potteries most similar to Madrid ware are found in eastern Iowa. However, they are not the Weaver types found along the Mississippi River trench (cf. Fokken and Finn 1984:4-21). Weaver potteries tend to have bolder stamps on the lip edges (Griffin 1952). Linn ware (Logan 1976; Benn 1978) is most similar to Madrid

ware. Madrid Stamped and a channeled Madrid Plain rim (Figure B.14) could blend easily into a collection of Levsen Stamped pottery from northeast Iowa. The thin walls, fine pastes and zones of petite stamps are common characteristics in both of these potteries. Additionally, Madrid Plain and Cord Roughened are similar to Spring Hollow Plain and Cord-marked in having curved rims, little decoration and the occurrence of punctates. The Saylorville collection also contains a rocker-stamped body sherd (Figure B.6g) of the type found on Lane Farm Cord Impressed or Stamped (Ibid.). The incidence of one sherd implying one vessel suggests that this vessel or the conception for making it was obtained through exchange with peoples to the east.

Although varying in execution and decoration, all of the early Late Woodland potteries cited above have one thing in common: relatively thinner walls than preceding Middle Woodland wares. This technical aspect has been analyzed by David Braun (1983) working in pottery from southern Illinois. Briefly, Braun found that Late Woodland potters made thinner walls while maintaining large vessel sizes by reducing the size of temper particles, thus refining the pastes so that tensile strength would be retained in walls. He links this technical change to the requirement for more effective simmering containers for processing hard seed foods. I (Benn n.d.) have found this technical change in Held Creek ware from western Iowa, and it appears to exist in Madrid ware. A plot of rim wall thicknesses against orifice diameters (Figure 10b,c) for High Bridge and Madrid potteries shows a reduction of 1.3mm (16%) in the wall thickness and only a 12.8mm (7%) reduction in orifice diameter. Furthermore, the necks of Madrid vessels are more constricted than High Bridge necks, so the vessel diameters of both wares probably are closer to the same than their orifice diameters indicate (Braun measured individual sherd radii, not orifices). The reduction of wall thickness continued in the subsequent pottery, late Late Woodland ware(s), with their walls being 2.3mm thinner (36%) while orifices were reduced by 34.8mm (18%) below High Bridge ware (Figure 10d). And, late Late Woodland orifices are even more constricted above their body diameters.

The technical changes in Madrid pottery are presumed to be linked to shifts in subsistence patterns, particularly processing of certain foods (see Braun 1983). Several researchers in Illinois have concluded that Late Woodland peoples inhabitated a more diverse range of ecozones than Middle Woodland populations (Farnsworth 1973; Kuttruff 1974; Roper 1975; Benchley, Hassen and Billeck 1979:158). This change placed human settlements adjacent to a wide range of resouces in ecotones, and it also resulted in the dispersal of territories. Similar changes in subsistence/settlement patterns have been recognized in central Minnesota (Gibbon and Caine 1980:64) and in western Iowa (Benn 1983:81). The functional data for Saylorville sites is too lean for comparison with other regional developments, so we cannot confirm the ceramic/subsistence change hypothses of Braun and others for the project area. The distribution of the 47 known early Late Woodland habitation sites in Saylorville (Figure 11) does show that numerous sites are located throughout the project. The sites occur on the same landforms in the same proportions as Middle Woodland sites. Furthermore, the early Late Woodland sites are clustered in at least three areas (survey biases are not evaluated): around Big Creek in Polk County, in the Scandia Bottoms in Dallas County, and around the Boone Bottoms in Boone County. These are locations of site clusters in previous Woodland periods. The blufftop mounds, on the other hand, cluster

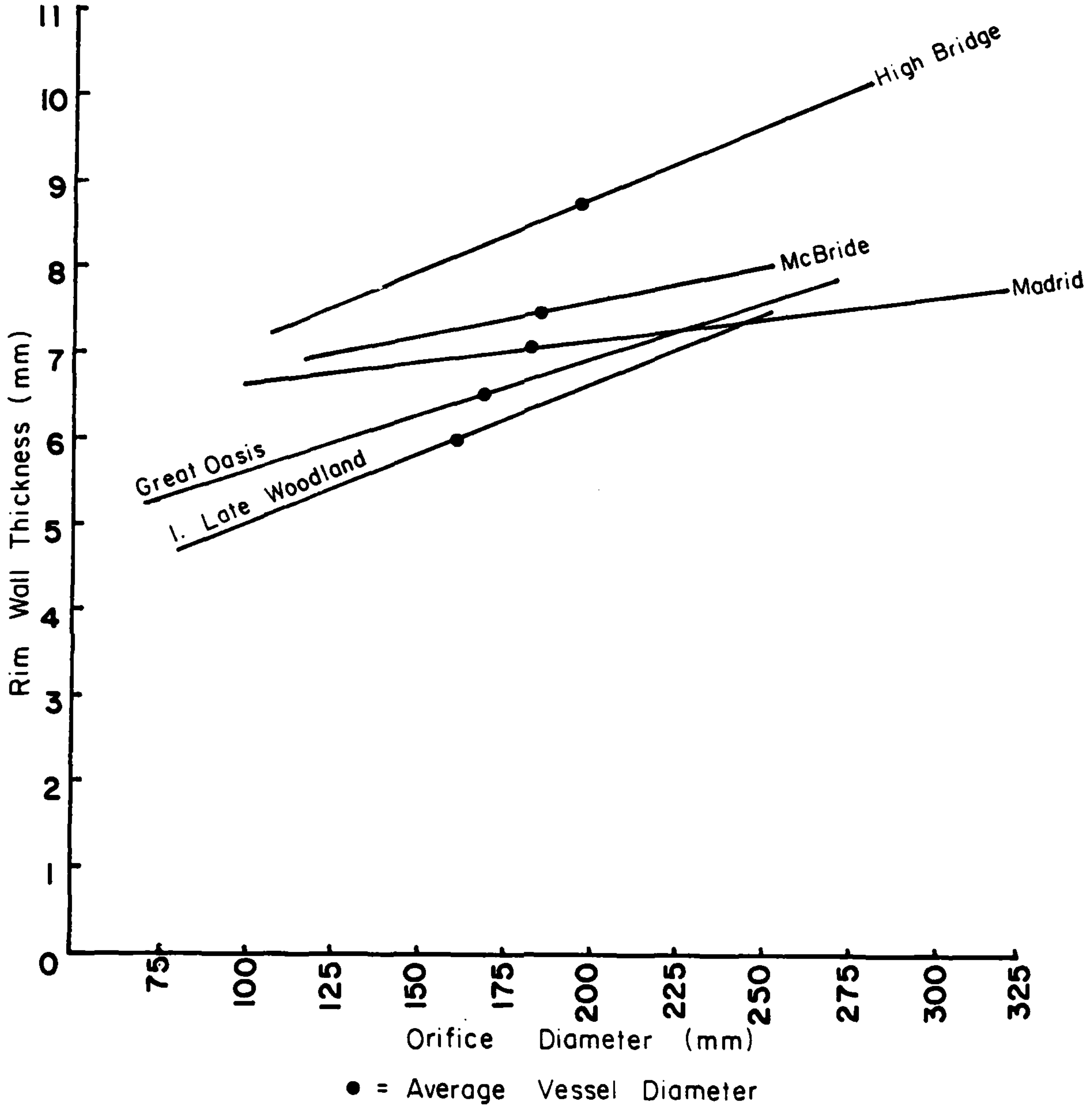


FIGURE 10

Regression Lines for Woodland Ceramics, Central Des Moines River Valley

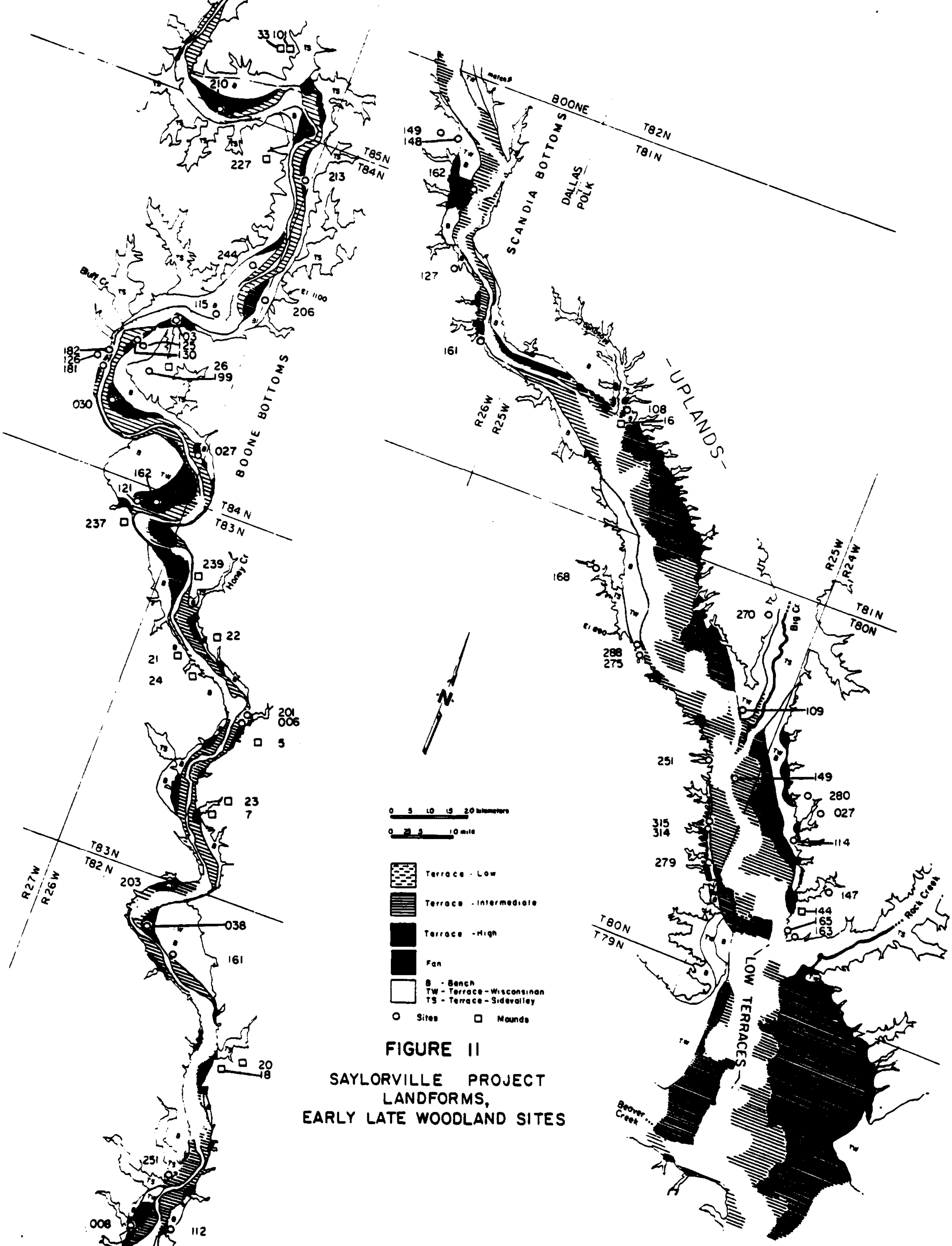


FIGURE II

SAYLORVILLE PROJECT
LANDFORMS,
EARLY LATE WOODLAND SITES

downriver from the Boone Bottoms. Kuttruff (1974:185) found site clustering in the lower Kaskaskia River valley in Illinois and attributed it to social factors rather than ecology. It is possible that early Late Woodland site distributions were an outgrowth of Middle Woodland social clustering, i.e. there was no significant settlement shift between these two periods. According to the dispersed pattern of blufftop mounds, however, there was a change in social patterns during the early Late Woodland period. The nature of that social change is a question entirely open to future investigations.

late Late Woodland

This period encompasses both the Great Oasis culture and two or more unnamed manifestations identified by cord decorated ceramics in the project area. The period dates between 1250 and 850 B.P. (A.D. 700-1100). Radiocarbon dates (Appendix E) from Saylorville sites do not conclusively determine the period's limits, particularly its beginning. From 13PK149 there is a date of 839+-50 B.P. (A.D. 1111; Wis-879) from level DUII (Osborn and Gradwohl 1981:131). This was a level where both early and late Late Woodland artifacts were found. The Christenson Oneota site (13PK407; Benn and Bettis 1981) produced bones and charcoal from one meter below ground surface, a provenience below the Oneota component. This date was 1110+-80 B.P. (A.D. 840 (Beta-2633). Great Oasis site 13BN110 yielded three dates averaging 893 B.P., A.D. 1057 (Wis-498, -501, -502; Gradwohl 1975:123).

The questions of cultural classifications for late Late Woodland manifestations in Saylorville Lake will not be resolved in this volume. No phase designations exist for peoples who manufactured cord decorated potteries. There are two reasons for this: numbers of rim sherds are statistically inadequate for regional comparisons, and whole Late Woodland assemblages are insufficiently defined. Likewise, the controversy regarding Great Oasis classification will not be entered. Great Oasis will be referred to as a phase following the Hennings (1978:14), but it would not be constructive to enter the debate over whether Great Oasis belongs in the Initial Middle Missouri tradition (Ibid.) or in some Woodland classification (Tiffany 1983:96-7; but <u>not</u> as an "Aspect," <u>sensu</u> the Midwestern Taxonomic System).

Diagnostic pointed/hafted bifaces (Appendix A) are easily distinguished for the late Late Woodland period, but it is not yet possible to attribute all of the types to specific cultural groups. Various medium and small sized, side notched points with sub-triangular to ovate blades (SN12 small and large, SN13, SN14) belong in this period. All are characterized by fine, pressure secondary flaking of (usually) flake blanks, which results in a point that is very thin relative to its width. Small versions of the points are arrowheads, while larger ones may have been knives and/or dart points. Some large points are resharped in the manner of knife functions. The majority point types of this period are small triangles. Three types are notched (T1, 2, 8), the latter being exceptionally irregular in form and chipping style (some appear to have been ground as much as chipped into form). Five triangular point types are ununotched (T3, 4, 5, 6, 7). Types T3, T4 and T5 are forms also found on Oneota sites. Small triangular points were almost exclusively arrowheads, as very few retain evidence of use-wear for other functions like cutting or perforating. Although knives of the unnotched, assymetrical form

(common on Oneota sites) or the ovate form have not been associated exclusively with a particular point assemblage, they probably will be associated with specific cultures when more work has been accomplished. Some types of small end scrapers also go with post-A.D. 700 assemblages.

Great Oasis ceramics from the project area are classified as Great Oasis High Rim (Henning and Henning 1978). Both plain and decorated types occur, although only the former are depicted in the analysis in Appendix B (see Gradwohl 1975:143, for analysis of decorated sherds). Characteristics of the High Rim type include fine dense pastes, smooth tooled surfaces, sharp rim/shoulder juncture and carefully executed decorations confined to the rim and lip. Impressionistically, Great Oasis pottery was manufactured to more rigorous standards than other Late Woodland wares. However, the Great Oasis potteries from Saylorville Lake do not exhibit the attributes of almost perfect control of decorative line spacing and surface finish that are found on specimens from the Great Oasis type site in Minnesota (Wilford 1945). A group of high rims, many with lip notches as well, from the project area (13BN30, -101, -114, -121; Figure B.20; Table B.4) shows variations in surface finish and form that place them on the edges of the ware. Many of these rims retain patches of exterior cord roughening and have non-parallel rim walls, sloppy extruded lips and more gently curving rim/shoulder junctures. One specimen has a lug at the point where the rim is castellated.

Other Late Woodland ceramics comprise four types in two wares. One ware is ununamed and includes types identified in Appendix B as "Cord Roughened" and "Cord Impressed." The cord roughened type has high rims that are straight to gently curved. Lips may be slightly thinned, and the rim/shoulder juncture is sharp. Exterior surfaces are covered by fine cord roughening, which may be slightly smoothed on the rim. Decoration is confined to a few lips with tool impressions. The cord impressed type has a fine paste with coarse crushed rock temper like the cord roughened type. Cord Impressed rims are more curved than the other type and have rounded rim/should junctures. Lips tend to be thinned. Exterior surfaces are cord roughened, except the rim areas tends to be smoothed. Single cord impressed decorations on the rim usually occur as evenly spaced, parallel horizontal lines. This central decoration may be supplemented with fringes of vertical cords, a pendant cord triangle or other corded geometric forms. Lips may have tool impressions, and some interior upper rims have a narrow row of cord impressions.

The other Late Woodland pottery is Saylor ware, which has been described by Osborn, Gradwohl and Thies (1978:26). The overall vessel form is like other potteries described above. Saylor ware is different in having thicker walls (circa 2mm thicker), castellated rims and probably squared orifices (Figures B.18, B.19). This ware also has decorations of nested chevrons done in thick, evenly spaced cords. Although the paste is hard and well fired, the rim walls and corded decorations are uneven, sloppy and less carefully formed than are other Late Woodland and Great Oasis wares. Saylor ware was manufactured at one site, 13PK165, while the other Late Woodland and Great Oasis wares come from several sites in the project area.

The collection of Late Woodland, cord impressed and cord roughened rims from the Saylorville project is small. But, it is sufficiently large and has enough variation to add complexity to an already confused picture of the past. To all of us who profess to "see" relationships in ceramic attributes, there

is much to be imagined in the Saylorville assemblage. The most obvious point about the assemblage is that Saylor ware is unique, and thus far it is from one site. The heavy walled Saylor vessels have corded designs and castellations like many examples of Minotts ware (Logan 1976). Minotts Cord Impressed is a largely undescribed ceramic assemblage from the southeastern quadrant of Iowa (Benn 1980:82; Riggle 1981). Its corded decorations may be composed of bold, evenly spaced cords that may have been applied one-at-a-time or as fine cords applied in a fabric. High, relatively straight rims also are common in the Minotts form. Minotts-like rims appear to be uncommon in the upper Des Moines valley (i.e. Prairie Lakes region), although one specimen is in David Carlson's collection from the Ft. Dodge area.

The remainder of the cord impressed collection from Saylorville has thin walls, curved rims and evenly spaced corded decorations that are attributes seen in Loseke ware (Kivett 1952). This is also a ware whose types lack definitive attributes because of small sample sizes, but it is a ware that is distributed across the northwestern quadrant of Iowa and into eastern Nebraska and adjacent southern South Dakota (Benn 1982). The Saylorville specimens are unlike the variety of Loseke ware from the Arthur site at Lake East Okoboji in that the latter have cord-wrapped-stick decorations that the former lack. Otherwise, Loseke ware and the Saylorville cord impressed potteries are essentially the same. Turning east, the evenly spaced corded decorations on Saylorville rims are the same treatment that is present on Lane Farm Cord Impressed (Logan 1976; Benn 1978) in northeast Iowa. (Both the Arthur site and Saylorville collections contain one Lane Farm rocker-stamped sherd.) The relationship between Saylorville pottery and Madison Cord/Fabric Impressed of northeastern Iowa is less close, because the latter has more complex decorations often composed of grouped cords (Benn 1978; 1980).

The preceding discussion pulls only a few potential relationships from the confusion of Late Woodland ceramic types. What may be emerging is an impression of east-west relationships that dominated over north-south relationships. For example, the Minotts horizon appears to be attenuated north of Des Moines; likewise, the stamped decorations that dominate Minnesota ceramics (see Anfinson ed. 1979) are not noticed in the central Des Moines valley. Conversely, Saylorville cord impressed ceramics are similar to Lane Farm Cord Impressed from the east and Loseke wares to the west. Of course, the Lane Farm types begin at or before A.D. 500 (Benn 1978; Stoltman 1979), so a proposed east-west relationship including the central Des Moines valley would also represent a time-line

Loseke ware, Saylor ware, Minotts and other midwestern cord decorated ceramics belong to a Late Woodland horizon involving change and rapid spread of a relatively simple decorative style. This occurred all across the Prairie Peninsula around A.D. 500-800. The earlier, eastern members of this horizon style are Lane Farm Cord Impressed closely followed by Madison ware in northeast Iowa and southwest Wisconsin (Benn 1978), and Maples Mills Cord Impressed in southwest Illinois and southeast Iowa (Riggle 1981). No doubt, the influence of these earlier ceramic traditions was responsible for the appearance of cord impressed decoration on the western prairies. But, this stylistic influence was the material manifestation of more profound cultural changes, which were <u>internally</u> inspired and compelled in cultures of the central Des Moines valley and western prairies (Benn 1983:83). The Great Oasis phase also was part of this general change.

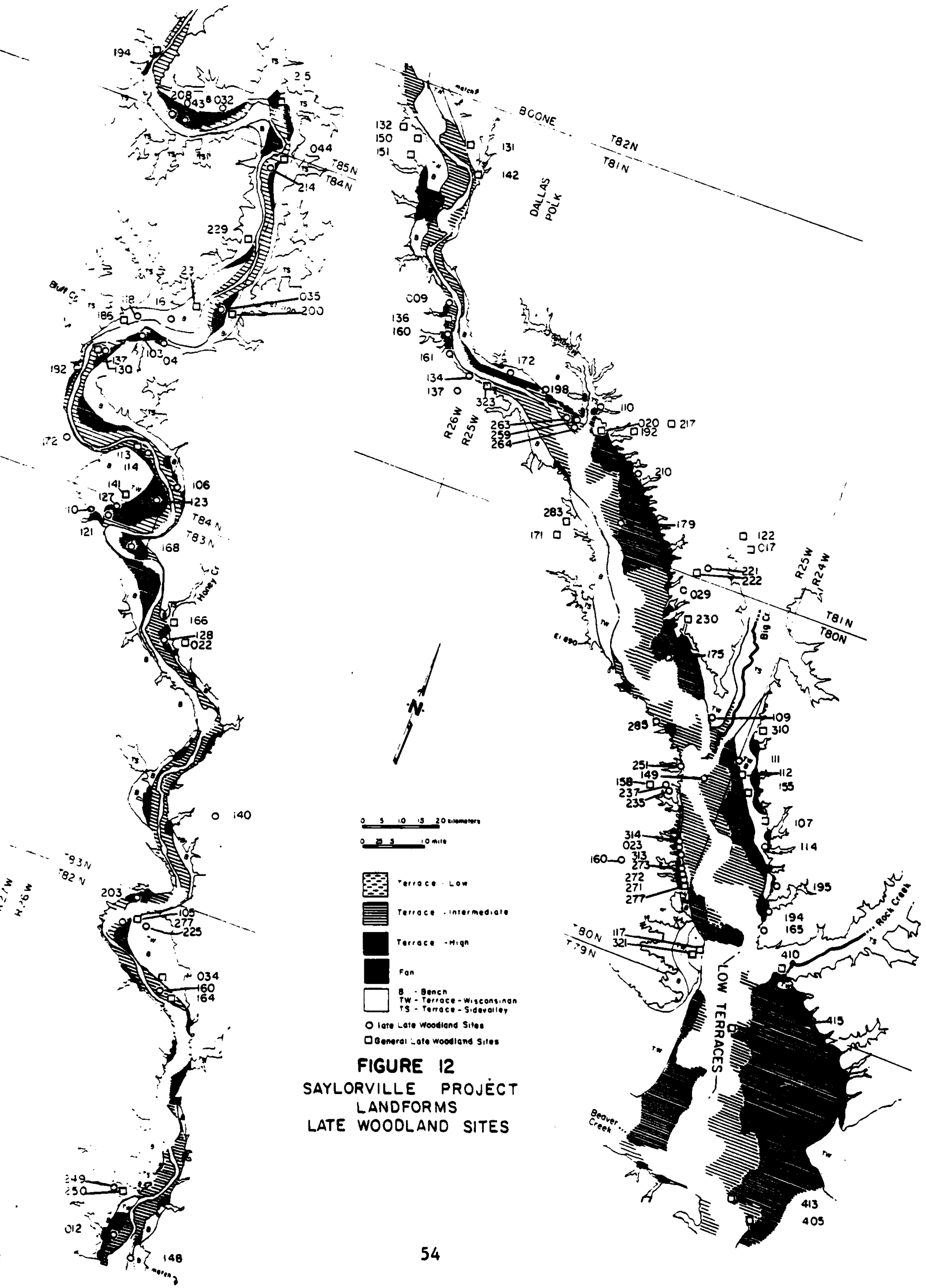


FIGURE 12
SAYLORVILLE PROJECT
LANDFORMS
LATE WOODLAND SITES

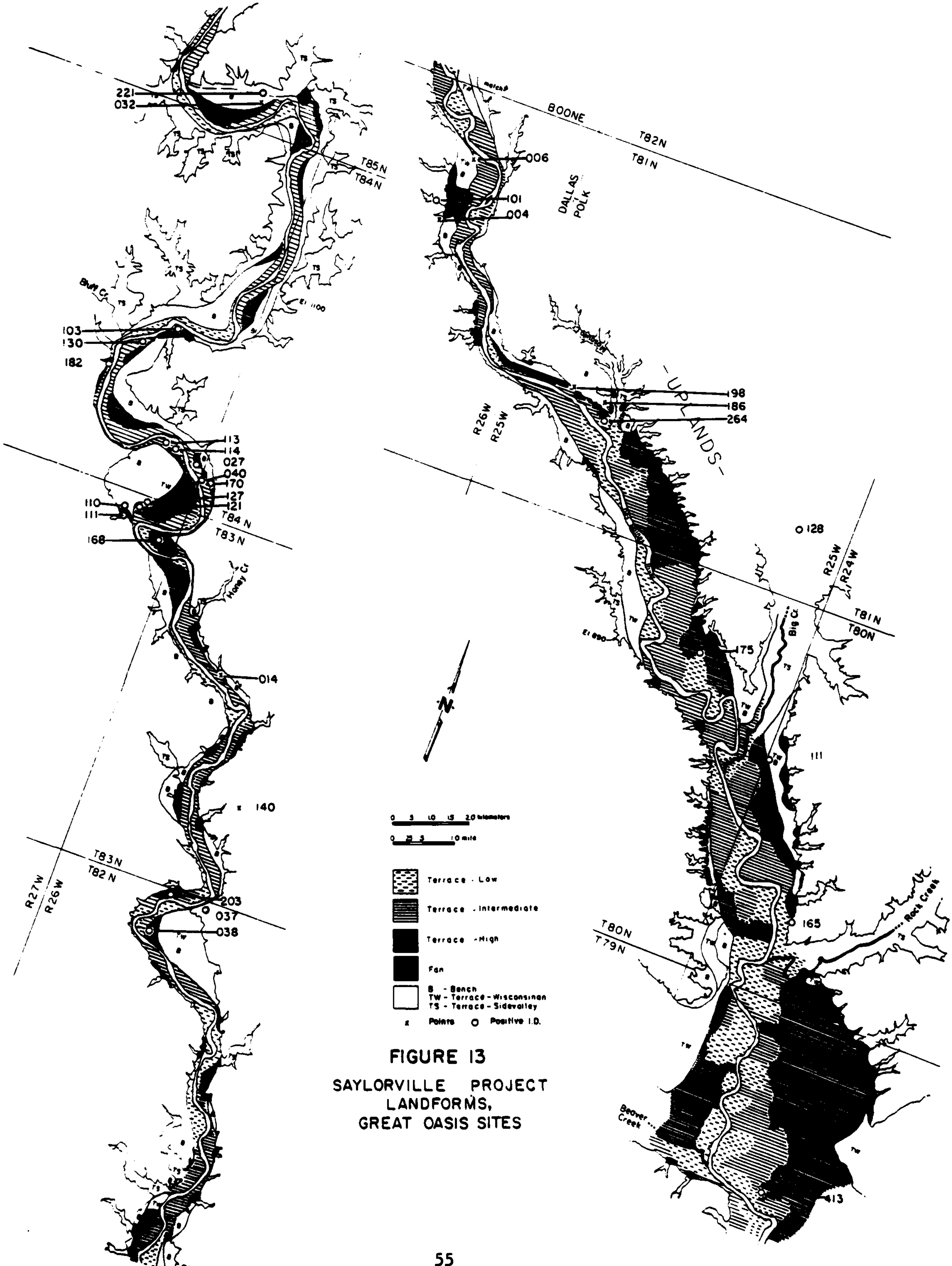


FIGURE 13
SAYLORVILLE PROJECT
LANDFORMS,
GREAT OASIS SITES

Great Oasis has been shown to resemble very closely other Late Woodland cultures, and it is thought to be antecedent to villager cultures classified as the Initial variant of the Middle Missouri tradition (Henning 1971:130; Henning and Henning 1978:15; Tiffany 1983:96-7; Benn 1982:181-2). The distribution of Great Oasis--the central Des Moines valley north through the northwest quadrant of Iowa, southwest Minnesota, and the Missouri valley in South Dakota (Henning 1971; Gradwohl 1974:96)--overlaps much of the distribution of Loseke ware. In the central Des Moines valley the distributions of 32 Great Oasis and 109 Late Woodland sites are the same (Figures 12, 13), although several Great Oasis sites are concentrated in the Boone Bottoms vicinity. Both types of sites also occur on similar landforms (e.g. Fans, TH, TI) in similar proportions. The correspondences between Loseke and Great Oasis potteries are numerous (Benn 1982:181-2), with many attributes of both wares overlapping on the same rim sherds in some upper Des Moines valley collections. Cultural similarities extend to the types of materials recovered from occupation sites. For instance, the limited structural data for Late Woodland (e.g. 13PK23 in Emerson and Finney 1984:122; 13PK165 in Osborn, Gradwohl and Thies 1978:97) and Great Oasis (e.g. 13BN110 in Gradwohl 1975:125) indicate wattle and daub structures were probably set on the ground surface and not in excavated house basins (although plowing has removed some evidence of house floors at 13BN110). Settlements of both groups are small (i.e. a few acres or less). The contents of the Late Woodland house at 13PK165 and the Great Oasis houses at 13BN110 also compare favorably. Trash pits yielded the remains of animals as well as maize, cucurbit seeds, sunflower, chenopods, nuts and other wild seeds (Gradwohl 1974:97; Osborn, Gradwohl and Thies 1978:102-3). Both cultural groups used the same forms of arrow points and probably shared other tools forms like knives and end scrapers.

The subsistence/settlement patterns of Late Woodland and Great Oasis peoples were similar, and the dates from Great Oasis sites (Henning and Henning 1978:13) indicate overlap in their time frames after A.D. 800. Both cultures have congruent geographic distributions as well. The evidence suggests that Late Woodland and Great Oasis cultures were in part contemporaries (Benn 1982:183; 1983:83), perhaps maintaining a tandem relationship in the same ecozones by exploiting separate territories. This would have to be the case in the Saylorville project--a wooded river valley enclosed by prairie. Dale Henning's (1982:284) reasoning that Woodland and Great Oasis cultures shared a similar social organization of tightly-knit, endógamous bands composed of exogamous, patrilineal clans is a corrolary to the argument for co-residence in this part of Iowa.

What Great Oasis and Late Woodland cultures apparently did not share was participation in exchange of exotic materials. Woodland groups appear to have exchanged only ceramic styles of a general pattern. Great Oasis sites have produced freshwater and marine shell in the form of beads, "crosses" and blanks (Knauth 1963; Gradwohl 1974:97; D. Henning 1982:286; King 1982). The freshwater shells must have come from the Ohio River basin, while the marine shell was imported from the Gulf Coast (Ibid.). This material and a wider range of objects in Mill Creek sites is associated with the Mississippian site of Cahokia at East St. Louis and its extensive interaction sphere that developed after A.D. 900 (see Gibbon 1974; D. Henning 1982:287-291). The enigmatic "crosses" from a Great Oasis cemetery in West Des Moines (Knauth 1963) appear to this writer to be abstract forms of the Mississippian and

Oneota "birdman" (Benn 1984b:95). Exchange of exotic materials is the means by which higher status individuals and groups augment their authority. Great Oasis involvement in an interaction sphere with influential Mississippians at Cahokia may indicate Great Oasis grew to dominate other Late Woodland cultures between A.D. 900-1100. The demise of Late Woodland peoples may have begun with the expanding influence of Great Oasis culture.

Mississippi & Proto-Historic:

This period begins at 850 B.P. (A.D. 1100) and ends with Euro-American settlement in the early half of the nineteenth century. The only recognized cultural manifestation of the period is Oneota. Dating of Oneota components in the Des Moines valley has been troublesome to say the least (Gradwohl 1974:94). Five dates from the Christenson site (13PK407) in the project area range from A.D. 1240 (Beta-5231) to modern (Beta-7834) for no apparent reason (Benn 1984b:45). The A.D. 1240 date corresponds to seven dates in the late twelfth and thirteenth centuries from the Mohler Farm, Howard Goodhue and Clarkson sites in the Red Rock area (Gradwohl 1974:96; Osborn 1982:76; Tiffany 1981:63-4). However, other dates from the Red Rock/Raccoon River area sites span the eighth to eighteenth centuries. No Oneota sites in this region have yielded European trade goods; thus, it is generally perceived that the Oneota had abandoned the central Des Moines valley before A.D. 1600 and probably by the fourteenth century.

Oneota in the central valley belongs to the Moingona-Burlington phase (Gradwohl 1967, 1974:95; E. Henning 1982). Moingona is the classification attached to the large Oneota villages in the Red Rock vicinity and at the mouth of the Raccoon River about 10 miles south of the Saylorville Reservoir. These large villages on second terraces or ridge tops show all indications of having been permanent base camps. They contain quantities of hunting, horticultural and processing tools as well as huge amounts of bone and vegetable debris. The latter includes maize kernels and cobs, squash seeds and (tentatively) beans (Gradwohl 1974:95). Among the animal remains are deer, elk, bison, fish and shellfish.

Roper (1984:151) states that smaller Oneota camps also exist in the Red Rock area. This smaller site type, often situated on a low terrace where burial by alluvium is frequent, represents the kind of Oneota occupation in the Saylorville project. Triangular points and shell tempered sherds mark the evidence for Oneota in the project area (Figure 14), pottery sherds being a better indicator of Oneota than the more widely used triangular point style. One of these sites, Christenson (13PK407), on a TI-4 terrace was partially excavated in 1983 (Benn 1984b). It proved to consist of a reoccupied settlement of family-size, oval houses which probably functioned as a winter camp. Ceramics from Christenson are identical to pottery from the Red Rock sites, indicating the same bands occupied both areas. Lesser amounts of Oneota material have been found upstream. Emerson's crew (Emerson et al 1983) located Oneota sherds on 13PK264, also located on a TI terrace, and shell tempered sherds have been taken from 13BN114 on TI-TH terraces in the Boone Bottoms (Osborn and Gradwohl 1982). The evidence at these sites is too slim to be certain that these are part of the Moingona-Burlington phase. Thies' (1979:94) analysis of 13PK251 shows that small Oneota component (sherds and triangular points) was vertically and horizontally separated from other

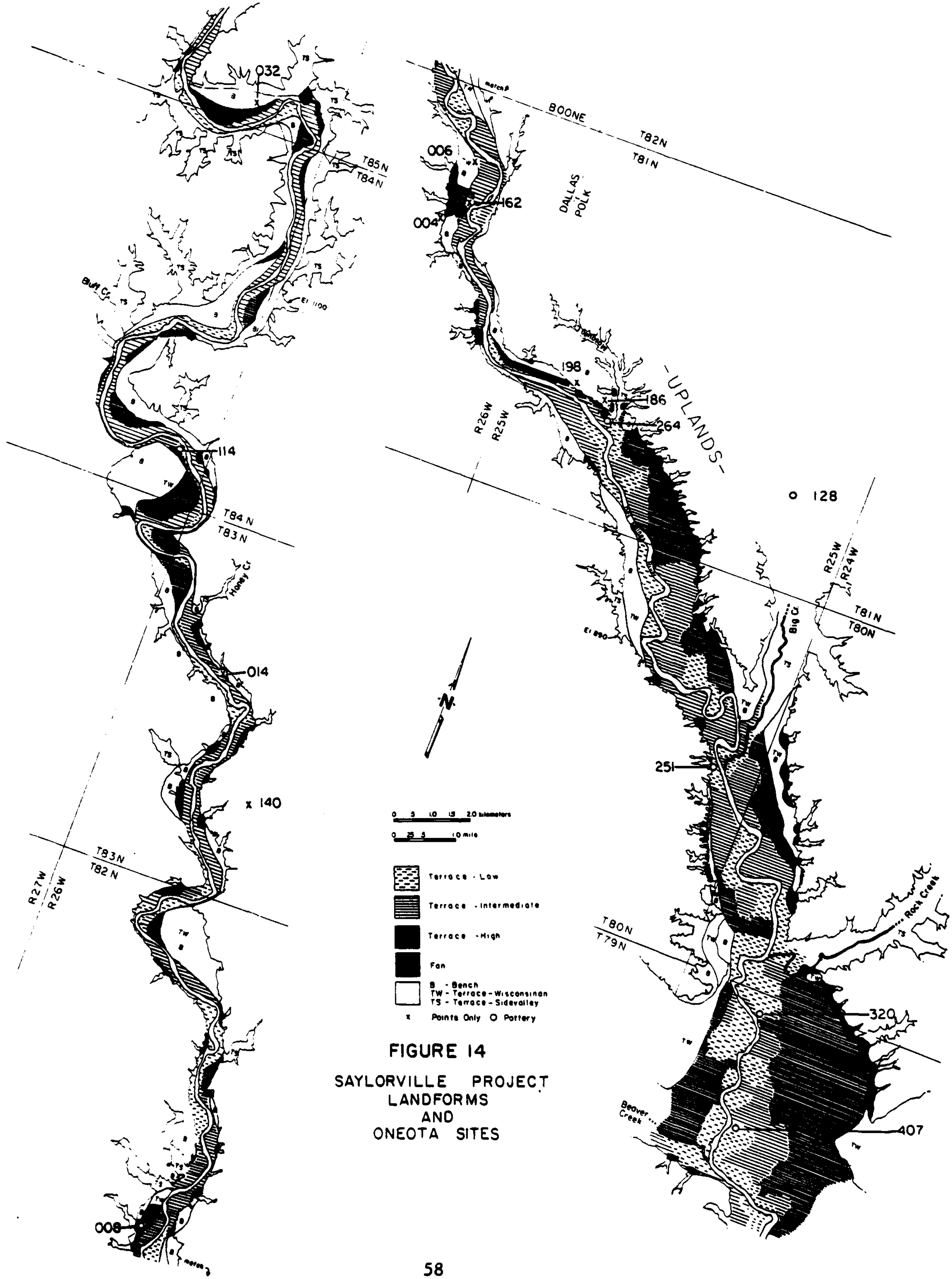


FIGURE 14

SAYLORVILLE PROJECT
LANDFORMS
AND
ONEOTA SITES

Woodland components on the same bench. Interestingly, some of the 13PK251 pottery was tempered with shell and hematite flecks, a character found at the Christenson and Clarkson sites (Osborn 1982).

What has emerged from recently acquired evidence is that Oneota was not restricted to the area south of the Raccoon River, i.e. south of the City of Des Moines (Gradwohl 1974; Osborn and Gradwohl 1981). Rather, their permanent villages were concentrated in the Red Rock area, but the "territory" controlled by inhabitants of the villages was much larger. That territory may have extended 100 or more miles in one or more directions from the "heartland," and furthermore the distribution of villages and seasonal camps may not have been evenly distributed in the territory. A similar pattern of permanent villages and seasonal camps has been described by Gibbon (1983:9) for the Blue Earth-Correctionville phase in southern Minnesota. From this evidence two conclusions must be drawn. 1) Locating seasonal Oneota settlements on low, alluvial terraces is a problem for archaeological methodology. [These types of Oneota sites can be buried in the TI landform or obscured by vegetation. Many may have been destroyed by river meandering. The same problems may apply for locating Great Oasis sites thought to be absent from the Red Rock Reservoir (Gradwohl 1974:97; Roper 1984:150)] 2) We must reconsider the nature of Oneota socio-economic systems to explain their territorial perogatives.

The evidence from Christenson and smaller camp sites indicates that the membership of permanent Oneota villages separated seasonally to occupy territories away from the "heartland." Band fissioning was a pattern in Woodland and Archaic cultures, but Oneota groups who reoccupied Christenson obviously were large--larger than the seasonal aggregates of earlier culture periods. Perhaps aggregate-bands left the vicinity of villages to minimize impacts on resources like firewood and deer. Large contingents of men and women may have dispersed into the spacious territory around villages to hunt solitary wapiti and herding bison on the prairies. Groups that left the village would have been large enough to defend themselves and to transport processed meat back to the village caches to supplement the maize harvest. While hunting bands were away, a substantial contigent of villagers would have remained to protect their investment in caches, structures and equipment.

I have analyzed this system of fluid aggregate-band organization and showed how it could evolve in situ from a Late Woodland base (Benn 1984b). Because of historically developed contradictions between the size of autonomous human productive groups, their perceptions of social space and the means of producing needs from natural resources, Late Woodlanders reorganized themselves into larger aggregates of producers coordinated by networks of stronger leaders. These leaders were warrior-elders, the heads of corporate descent groups. They were supported by a symbolic and iconographic system we identify in general as Mississippian. Once established the Oneota system was engendered to expand at the expense of indigenous Woodland and/or Great Oasis peoples through the mechanisms of raiding and ideological hegemony. The Oneota system was never circumscribed by dense human populations characteristic of the Mississippi River basin farther to the south. Thus, the Oneota retained a fluid aggregate-band structure and many aspects of a hunting and collecting subsistence syncretized with the leadership symbolism and producer relations typical of the Mississippian chiefdoms to the south. From this reasoning it is concluded that the Oneota could not have co-occupied the

central Des Moines valley and adjacent areas with other cultures, i.e. Great Oasis, for the Oneota would have absorbed weaker groups. Therefore, large regions around major Oneota settlements, like the Red Rock/Raccoon sites (and Blue Earth-Correctionville, Orr, Burlington, etc.) should appear to be abandoned archaeologically except for small, seasonal Oneota camps.

Abandonment may be the situation after the Moingona Oneota left the central Des Moines valley. No evidence of proto-historic tribes has been located in the project area (see Osborn and Gradwohl 1981). The Algonquian speaking Sauk and Fox (Mesquakie) controlled eastern Iowa by the end of the eighteenth century and are assumed to have visited the central Des Moines valley (Mott 1938:274). In the early nineteenth century Euro-American settlements began to encroach on Indian lands in eastern Iowa. The Sauk-Fox gave up some of this land by treaties of 1832 and 1837. They agreed to cede all of their lands west of a frontier line through the "Red Rocks" after 1845; this treaty was signed in 1842. Indians camped in the vicinity of Des Moines after a garrison of United States dragoons built Fort Des Moines at the confluence of the Raccoon and Des Moines Rivers in 1843. Most of the Sauk-Fox were removed to Kansas in 1845-46 (Union Historical Company 1881:133, 218, 277-8).

IV
OVERVIEW OF HISTORIC CULTURAL RESOURCES

by Leah D. Rogers

This chapter is concerned with historic cultural resources, including historic archaeological remains, archival records and oral histories. The documentary evidence for Saylorville Lake is substantial but there is a shortage of archaeological data to combine with these written records. The overview of information for the historic period is covered in three parts. First, a brief history of the project area is presented within the framework of the Resource Protection and Planning Process (RP3). Then, changes in the documentation of the RP3 culture periods is discussed. Finally, some analytical techniques and recommendations for dealing with historic cultural resources are presented.

Brief History of the Central Des Moines Valley

Early Contact:

Historically the central Des Moines River valley was occupied sporadically during the middle to late 18th century by Algonquin-speaking Sauk and Fox (Mesquakie) Native American groups. By the early 19th century, Euro-American settlements had encroached on this territory pushed the Sauk and Fox farther westward.

In 1835 the U.S. War Department dispatched an expedition of three companies of the First U.S. Dragoons to establish a fort near the mouth of the Des Moines River. This expedition was led by Lt.-Col. S.W. Kearny, and one of the three company captains was Nathan Boone. This trek proceeded up the Des Moines River valley to the Raccoon Fork, where they selected a site for the construction of Fort Des Moines (see Henning, Saunders, Donham and Mandel 1982). A party led by Captain Boone was sent north and eventually ventured into the present day Boone County area. They then pushed northward and spent several months exploring northern Iowa. The log books and maps made by members of this expedition, such as Lt. Albert Lea, provided the first body of knowledge concerning this area for Euroamericans (Gue 1903:161-164).

The Treaty of 1842 established:

> a frontier line through the "red rocks" (the Pennsylvanian sandstone outcrop immediately upstream from the former town of Red Rock) along the Des Moines River. White settlement was to be permitted east of this line, while the Sauk-Fox were to hold the lands to the west for three years, at which time they were to remove completely from Iowa (Gradwohl 1974:99.)

A military fort was established at the fork of the Raccoon and Des Moines Rivers for the purpose of protecting the Sauk-Fox from the Sioux and for keeping white settlers from squatting on the land before the terms of the treaty had expired. The fort was built in 1843 and named Fort Des Moines after a previous fort located on the Mississippi River.

> Between 1843 and 1845 the Sauk-Fox resided near Fort Des Moines, trading with several fur traders there and hunting along the valley north into Boone County. Most of the Sauk-Fox were removed from Fort Des Moines to Kansas in the fall of 1845, but one group of about 200 briefly escaped into Southern Boone County and were not taken to Kansas until the spring of 1846 (Ibid.)

In 1845 the central Des Moines River Valley was officially opened for Euro-American settlement, though isolated individuals had ventured into this area to settle before the terms of the treaty had expired. These individuals had been drawn by the presence of the fort in 1843 and had subsequently moved upriver (Union Historical Co. 1880b:244,305).

There are some historical references to the possibility of scattered groups of Pottawatomie Indians being in this region around the time that Euro-American settlers were moving into the area. Benjamin Williams settled in Boone County on the east bank of the Des Moines River in what is now Section 34, T82N, R26W, Douglas Township. He claimed that when he first settled the area had been used recently by the Pottawatomie for sugar making. They had left behind their troughs of which he subsequently made good use (Union Historical Co. 1880a:304-306).

Alexander Swim, another early settler in this region, settled in the Big Creek area of Polk County. It is reported in historical sources that upon arrival he found the remains of

> ...an old Indian Village called Wauconsa, and out of the material of these rude aboriginal dwellings constructed for himself a house to live in (Union Historical Co. 1880b:346).

This Indian village according to 19th century maps of the area was located near Polk City, although no conclusive evidence of this early occupation has ever been noted (Figure 15).

The occupation of the central Des Moines River Valley by historic Indian groups is not well documented, and few archaeological sites can be linked to this occupation period. The Chesterfield Graves site in downtown Des Moines was excavated in the early 20th century and provides virtually the only definite evidence of historic tribes in this region. This burial ground consisted of 23 graves which contained European trade goods such as glass beads and items made of brass and iron. (Gradwohl 1974:99; see Holland n.d.b for skeletal analysis).

From the lack of archaeological evidence it appears that historic Indian occupations in this region were sporadic and temporary, perhaps indicating an area used for seasonal hunting and as an avenue for transportation to other regions. This assumption must be demonstrated, however, through more

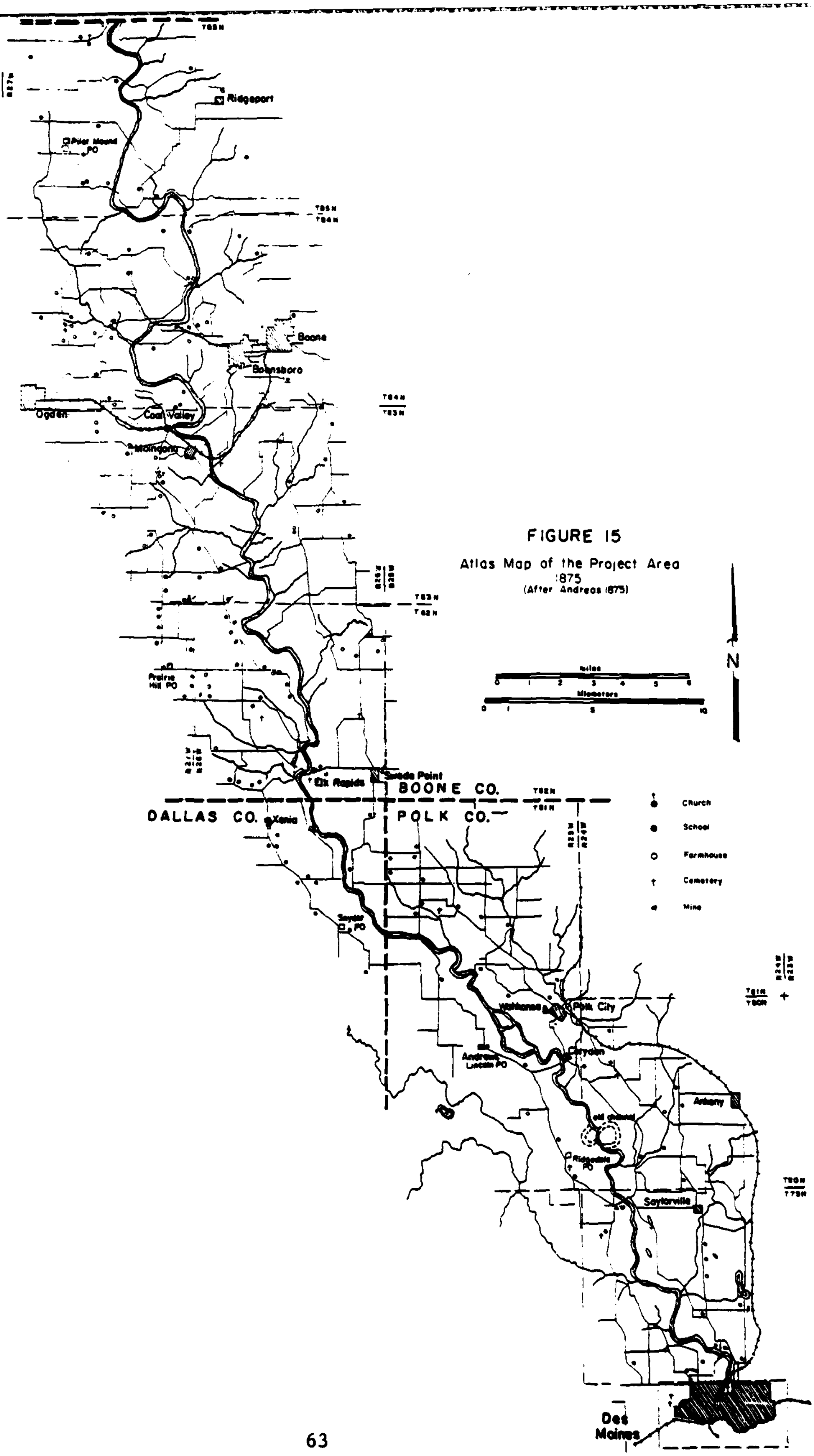


FIGURE 15
Atlas Map of the Project Area
1875
(After Andreas 1875)

intensive site survey and testing. A potential source of information about historic Indians might be the treaty negotiations and early land survey records. However, during this archival search no references were found relating specifically to this occupation period. One other possible source of historic information would be oral historical traditions among descendent groups such as the Mesquakie, who are presently settled in Tama County, Iowa. This group is descended from a portion of the Fox who remained hiding in the Iowa River Valley when the other Sauk-Fox groups were being evacuated to Kansas. The Mesquakie were able to buy back some of their previous landholdings and formed a settlement from which grew the present day Tama County settlement (Gradwohl 1974:99).

Early Settlement:

Euroamerican settlement of the central Des Moines River valley began in earnest in 1845 when this area was thrown open to settlement. The period 1845-1857 saw the initial influx of emigrants. Growth during this period was spurred by improvements in transportation, such as the extension of the railroad into Iowa from eastern areas, by land speculators and railroad companies who encouraged emigration, and by hardships in already settled areas during 1854-1856. The latter included an epidemic of cholera in the middle United States, a severe drought in the Ohio Valley in 1854, a famine in Ireland, and revolutions in Hungary and Germany (Snedden and Snedden 1971:28-29). All of these factors, including the fact that Iowa was admitted to the Union in 1846, served to create a fairly rapid increase in settlement and population growth in this region. Pamphlets and guidebooks were written to extoll the virtues of the river valley and to encourage emigration into the area (Parker 1855:34, 112-115, 122, 163; Newhall 1846:46-49). In fact, Parker's (1855) handbook specifically referred to the "Immense Immigration of 1854," and in describing Boone County he commented that, "Immigration is rapidly pouring in." (1855:113)

It was during this time period that all three of the counties in the Saylorville project area were first settled and organized. Polk County was organized in 1846. One of the first settlers in this county was John Saylor who located at the present town of Saylorville in 1845 (Union Historical Co. 1880b: 312,414). The first permanent settlement within county boundaries was called Big Creek. It was founded in 1850 on a point of timber extending into the prairie on Big Creek, which empties into the Des Moines River. This settlement later became known as Polk City, a town which survives to the present day (Figures 15, 4). Important factors in the early development of this area included the building of roads, mills and a stage line. The first county road established in 1847 ran from Fort Des Moines to the future site of Elk Rapids in Boone County and passed through Big Creek (Polk City). Saw and grist mills were constructed in closer proximity to the early river settlements than Fort Des Moines or mills to the east. The establishment of stagecoach routes by 1853 from Fort Des Moines through Polk City to points north along the river improved communication and travel (Figure 15).

Polk City had two rival towns in its early days. These were Corydon, which was platted in 1853 by J. H. Skidmore and now designated as 13PK109 in the Saylorville Reservoir area, and Montecute (or Springfield) which was laid out in 1849 by John Houser (Figure 15). Both of these towns were located

within close proximity to Polk City on the east bank of the Des Moines River, and both failed to survive. In its early days, Corydon (an addition called New Corydon was made in 1855) boasted a ferry landing, school, store, saw mill and blacksmith shop. Montacute never grew much beyond a store, post office and two houses. This town lost out to Polk City when the post office was moved from Montecute to Polk City in 1852 (Denny and Pratt 1973:11,15; Union Historical Company 1880b:346).

Another early town in the Saylorville area in Polk County was Andrews, which was platted in 1857. Andrews was located approximately one mile west of the Des Moines River. Andrews had a school and a post office (1861-1886), which went by the name of Lincoln. A cemetery, also by that name, was located on the edge of this town. This community was sometimes called Dogtown (Figures 4, 15) (Denny and Pratt 1973:9).

Townships in Polk County were first organized in 1847, beginning with six and eventually dividing into 22 by 1880 (Union Historical Company 1880b:438-441). The first land entries date from 1848 due to the fact that no lands could be sold in this area until they had been surveyed. This process was not completed until 1848 (see Figure 3). The first land sales bear this date even though people had begun to settle in this area several years before. The government price for the first land sales was $1.25/acre (Union Historical Co. 1880b:398; Big Creek Publishing Co. 1975).

Boone County was organized in 1847, and the first permanent settler was Charles W. Gaston who had arrived the year before. His claim was located in section 34 of present day Douglas Township on the east bank of the Des Moines River. Benjamin Williams made a claim next to Gaston's in 1847 in the place where he laid out Elk Rapids in 1851. Boonsboro was laid out in the same year to the north and east of Elk Rapids. Boonsboro eventually was incorporated into the town of Boone, which was first laid out in 1865. Of these three settlements only Boone survives, and it is presently the county seat (Figures 4, 15) (Union Historical Co. 1880a:304, 298-299, 350, 499-527; Goldthwait 1914 Volume I:278).

Anna Dalander immigrated from Sweden with her family and eventually settled near Gaston on Section 36 in 1846. In 1851 the town of Swede Point was platted on her claim. This community prospered and later became known as Madrid, which still survives as a small town (Figures 4, 15) (Union Historical Co. 1880a:306; Proescholdt 1976:24). There are indications in the naming of communities and individuals that ethnic enclaves developed in the earliest settlement patterns. How many generations these ethnic concentrations survived in the overall settlement pattern remains to be investigated.

Another early settlement was Pea's Point located to the north of Elk Rapids on a small tributary of the Des Moines River. This area was first settled in 1846 and was later renamed Parkersburg. It did not prosper and no longer exists (Union Historical Co. 1880a:300; McFarland 1969:121).

In 1849-1850 a sawmill was built on the west bank of the Des Moines River across from the Elk Rapids settlement. Sawmills were of primary importance to early settlers as timber was badly needed for building purposes. To have a sawmill within a reasonable traveling distance was a boon to settlement in an area (Union Historical Co. 1880a:304-305; Parker 1855:114; Swisher 1940:153).

That this mill was later converted to a gristmill points out the changing needs of early settlements. Once enough timber had been processed to construct permanent shelters, the next most pressing need was the food supply. When the nearest mill (which at that time was nine miles south of Fort Des Moines) was a great distance away, a journey downriver with a load of grain was an arduous and risky business. To have a gristmill close at hand fostered permanence in the agricultural community (Union Historical Co. 1880b:371). The importance of early mills is illustrated in the following description of the mill at Elk Rapids as it was in 1855:

> The mill at the Rapids, 15 miles below Boonsboro, is situated at one of best mill sites in the county.... But the present owners are pecuniarily unable to improve it as it should be. They make good flour at said mill, but fall far short of supplying the wants of those who naturally depend upon it (Parker 1855:114).

A sawmill built at Swede Point in 1855 had to be run "night and day" as the need for lumber was so great in this growing settlement (Danbom 1908:207).

The only township of Dallas County included in the Saylorville area is Des Moines Township located in the extreme northeast corner. Dallas County also was organized in 1847, but its first permanent settlers had arrived earlier in 1845 when Daniel and Lewis Stump settled in Van Meter Township. Des Moines township was first organized in 1849; it was then much larger until its present boundaries which were set in 1861 (Union Historical Co. 1879:288, 305, 515). O. D. Smalley was the first settler in Des Moines Township. He settled on Section 26 in 1846. Smalley is often referred to as the "Christopher Columbus of Dallas County" as he had been the first to actually cross the Des Moines River to settle on its western side. He supposedly made this crossing at Elk Rapids (Union Historical Co. 1879 :515-518; Wood 1907:157-161).

Settlement Boom:

The time period from 1845-1857 saw many developments in the Saylorville area including an influx of settlers, schools being built, early post offices being established (Smalley's house served as the first post office in Des Moines Township in 1858), and the first mills being built. The first water mill was constructed by Buel Lathrop in 1848 on Hickory Creek (Union Historical Co. 1879:356,334).

It is noted in numerous sources that the earliest settlements along the central Des Moines River Valley were primarily at points where the timber fingered out into the prairie along streams which empty into the Des Moines River. Settlements such as Swede Point, Pea's Point and Polk City are examples of this dendritic settlement pattern (Figure 15). Locating in such areas afforded the best of both environments. Timber, a vital resource, was close at hand as was the fertile prairie for cultivation (Danborm 1908:205; Union Historical Co. 1880a:297; 1880b:265). As noted in Parker's handbook:

> The settler may always select upon the prairie, land as fertile as the richest riverbottoms; and by settling on the edge of the timber, combine every advantage afforded by the latter.

The timber belt along the river was four to five miles wide making access to the prairie difficult. Settlements on the river itself were therefore primarily geared to river trade, as this was the major avenue of transportation. Settlements such as Elk Rapids and Corydon are examples of a the dendritic settlement pattern (Figure 15). When other avenues of transportation were created such as roads, stagecoach lines and later the railroad, coupled with the failure to make the Des Moines River reliably navigable, river communities were weakened in favor of the communities located inland. While Polk City survived, Corydon did not and likewise, while Madrid (Swede Point) survived, Elk Rapids did not (Danbom 1908: 208; Madrid 1983:303). In this way the early dendritic settlement pattern was gradually replaced by a pattern oriented to land survey boundaries.

Another factor which greatly affected these river communities was flooding. There were two major floods in 1849 and 1851 which destroyed structures along the riverbanks. The flood of 1851 in fact, ..."reached an immense size, tearing down and carrying off everything that came within reach of its current, and reaching out in many places to a width of two to four miles." (Union Historical Co. 1879:351) Another flood in 1857 is held responsible for destroying the mill at Elk Rapids, the loss of which hastened the demise of the town (Goldthwait 1914 Vol. I:228).

The Nation Divided:

The next period of development in the central Des Moines River valley covered the years between 1857 and 1865. Development during this period was governed primarily by two major events: the financial crisis and depression of 1857 and the Civil War, 1861-1865. The first event was precipitated by the failure of the Ohio Life Insurance and Trust Company in 1857 which caused a severe panic in New York. This financial crisis spread and was especially hard on the undeveloped areas of the western frontier. In Iowa the banks were unprepared to handle the crisis due to the overextension of credit in land speculation. As a result the value of real estate plunged, and everyone suffered. This served to slow the influx of settlers into the frontier regions (Snedden and Snedden 1971:5; Longworth 1971:7; Union Historical Co. 1880b:415-416; Wood 1907:35-36).

Between the crisis of 1857 and the outbreak of the Civil War in 1861 there was a period of recovery, wherein the area prospered and developed. However, even this period was not without setbacks, which this time were a result of the vagaries of nature. In 1858 and 1859 excessive rains resulted in crop failures. Not only did the farmers suffer but so did the businesses which depended on their products and patronage. It was at this time that Elk Rapids ceased to be a viable town (Snedden and Snedden 1971:7; Danbom 1908:208; Union Historical Co. 1880b:536; Wood 1907:36).

The Civil War itself did not have the impact on Iowa that it did on states more directly involved. The conflict served to deter immigration, although it did not bring a halt to development in the central Des Moines River valley. One definite effect may have been felt in the loss of manpower, as this area sent its fair share of men to war. Boone County alone sent about 500 men at a time when the total census population was 8,244 (Longworth 1971:7; Madrid 1983:308; Hurst n.d.: 120).

Rural, Urban and Industrial Development:

From 1865 to 1900 two major industries dominated development in the area. These were the railroad and coal mining. After the Civil War, recovery was hastened by the extension of the railroad into and beyond the Des Moines River valley. This construction was spurred by increasing population growth in this area, as well as by the introduction of farm machinery, which increased productivity and required more efficient transportation to reach ever expanding markets (Big Creek Publishing Co. 1975; Union Historical Co. 1880b:366). In 1865 the Chicago and Northwestern Railroad completed its line to Boone (then called Montana), and in 1867 it was extended to Council Bluffs. The location of the station at Boone instead of Boonsboro sealed the fate of the latter community. However, Boonsboro would not be the only town to suffer as a result of railroads being located elsewhere. Many towns were platted in anticipation of the railroad going through a certain area only to die on paper when construction plans were changed (Longworth 1971:8, Union Historical Co. 1880a:407-412). For example, Xenia which was platted in Dallas County in 1856 had great hopes for prosperity when the railroad ran a line through this small community. Unfortunately the grade in Xenia was too steep and deemed unsuitable for a railroad, so the station was located instead to the west at Woodward. As a result Xenia died, and Woodward survives to the present day (Figures 4, 15) (Union Historical Co. 1879:492).

In 1867 the Chicago, Rock Island and Pacific Railroad was completed to Des Moines, and in 1874 a narrow gauge line was opened from Des Moines to Ames by way of Polk City. For five years Polk City prospered as a result and began to foresee a great future for itself. However, the railroad was changed to a regular gauge and the track was straightened, by-passing Polk City in 1879. The town never recovered and survives today only as a small community (Union Historical Co. 1880b:633; Big Creek Publishing Co. 1975) (Figures 4, 15).

The railroad had another major impact in the rapid development of the coal mining industry. The advent of railroads into this region had a two-fold effect upon the latter. Until this time, coal mining had been a seasonal, small-scale, and basically individual effort supplying local markets with coal for the winter months. There was no way to ship large quantities of coal until the railroads were constructed, and the railroads themselves spurred production as they were a major consumer of coal (Madsen 1974).

Moingona had active coal mines from 1866-1887, when they were closed due to strikes, bankruptcies, and changes in the railroad. Coal Valley near Moingona originated as a result of the coal mines in this area and failed to survive when the mines closed (Figures 4, 15) (Schroeder 1979: 173 and Schulte 1974:30-32). Another coal mining town which survived only as long as the mine did was Incline on the west side of the Des Moines River in the Ogden vicinity (Figure 4). There was a coal shaft in operation here from ca. 1880 up until the early 1900s. Other mines in the Ogden area operated off and on during the same period but eventually closed after being plagued by mine fires, labor troubles, and strikes (The Ogden Reporter 1966).

The majority of late 19th century coal mines were in the Boonsboro/Moingona area until the early 1900s, when coal was discovered in the Madrid vicinity. Little mining was conducted in Dallas County until this same

time when coal was discovered in Des Moines Township (Figure 2) (Madrid Register-News 1975).

Coal in the central Des Moines River Valley is of a low-grade bituminous quality exposed in seams along the valley. Early mines were the "drift slope" type wherein the exposed seams were worked from the surface. These were small-scale operations supplying local winter demands. The later mines were full-scale shaft operations, but the low grade seams often played out. The Angus mines in Boone County had to close due to excessive amounts of sand and water overlying a thin strata of slate, which made mining too expensive to continue (Madrid Register-News 1975).

Another factor affecting settlement and development in this area during the 19th century was the controversial Des Moines River navigation improvement plan which began in 1846 and was not resolved until 1894. This was a plan devised to make navigation on the river accessible to normal river traffic by dredging and building dams and locks. The river in its natural state was too shallow and had rapids which hampered navigation except during periods of high water. Originally this improvement was to extend only from the mouth at the Mississippi River to the Raccoon Forks at Fort Des Moines. Eventually the improvement plan was extended all the way to the Minnesota border (Union Historical Co. 1880a:460-474; Parsons n.d.:11; Madrid 1983:304-305).

This plan turned into a major boondogle as the company contracted to conduct the work failed to make any noticeable navigation improvements. This company was based in New York and was entitled the "Des Moines River Navigation Company." As part of the improvement plan the company was granted title to every odd numbered section of land up to five miles on both sides of the river eventually extending its entire length within Iowa. This phenomenal land grant was to have repercussions all along the Des Moines River valley because original settlers were forced off their lands with little or no compensation. That this land grant had a definite effect on the settlement (as well as the development) of the Des Moines valley is often reported but has never been closely examined by historical researchers (Parsons n.d.:11; Madrid 1983:304-305; Union Historical Co. 1880a:460-474; Goldthwait 1914 Volume I:135-143).

In 1858 the state of Iowa attempted to end this controversy by settling with the Navigation Company as requested by the people in a petition. As part of this settlement the company surrendered its dredge boat and paid the state $20,000.00 for which the company eventually received the title to 471,000 acres of land along the river, including acreage above the Raccoon Forks. This resulted in numerous title conflicts, and in 1860 the United States Supreme Court handed down a decision that the original (1846) land grant did <u>not</u> extend above the Raccoon Forks. Therefore, in 1862 an act was passed to include the upper Des Moines River in this grant (Union Historical Co. 1880a: 460-474, Madrid 1983: 304-305; Parsons n.d.:24 and Goldthwait Vol. I 1914:145-151). It was noted that the conflict did not end there; in fact:

> Notwithstanding this additional legislation and frequent decisions by the High Courts, much of the land thus granted to the river company was preempted by settlers and quite a number of parcels were patented by them. These transactions have eventuated in interminable lawsuits, disputes and neighborhood disturbances, which

> at times have resembled riots. These disturbances have contributed to greatly retard the settlement of the county [Boone] (Union Historical Co. 1880a: 466-467).

When the people of Boone County realized that the settlement had actually favored the Navigation Company (which also was approved to form a railroad company in 1858), residents came to the conclusion that they had a claim at best to the timber on company land. Settlers began cutting the timber and floating it downriver to Des Moines which was, at that time, experiencing a building boom and was in need of lumber. When the Navigation and Railroad Company discovered this, they dispatched agents to brand their timber. The overzealous agents actually branded some non-Navigation Company timber. When all the logs began to be confiscated upon arrival in Des Moines, fighting erupted. Some company agents were beaten, and the company retaliated by sending an armed force to Boone County to stop the timber cutting. This force was met by a mob of angry Boone Countians, and the company backed down (Union Historical Co. 1880a:472-474; Madrid Register-News 1975). It was noted in 1880 that:

> This stopped the log-branding business and low water in the river for a year or so destroyed the timber trade south, and the people set to work to build upon and fence their lots and farms with timber so plentiful and cheap, but now the timber from the river land is all gone, and stumps and brush mark its line so well that a stranger passing through the timber can point out where the river land tract begins and where it ends
> (Union Historical Co. 1880a:474).

Land title disputes in the 1860s forced other petitions on the behalf of the original settlers. In 1868 the United States Supreme Court ruled in favor of the Navigation Company's land grant titles, and settlers who did not buy their homes at an advanced price were forced off their land by court order. Not until 1894 was an act passed to indemnify the forced-out settlers (i.e., those that were still alive in 1894) with a small compensation for their lost homes. This officially brought to an end the river lands controversy. The only winner in this major fiasco was the Des Moines River Navigation and Railroad Company which, for very little work and money, received the title to hundreds of thousands of acres of land which they were free to sell (Madrid 1983:304-305; Goldthwait 1914 Vol. I:145-151; Parsons n.d.; Union Historical Co. 1880a:460-474).

Therefore from 1848, when the Commissioner of the General Land Office gave the opinion that the 1846 grant extended the entire length of the Des Moines River within Iowa until 1868 when the Supreme Court upheld these land grant titles, there was conflict and uncertainty concerning settlement along the river. That this had an effect on the development of the central Des Moines River valley is likely and may be best reflected in the settlement patterns that occurred during this 20 year period. The illumination of such patterns is a possible avenue of future research.

Change in the Twentieth Century:

The early twentieth century saw several events which influenced development in this area. From 1900-1950s the coal mining industry played an important role in the central Des Moines River valley. For a time after the discovery of coal in the Madrid vicinity (Boone County) and in Des Moines Township in Dallas County, large scale mining operations boomed and with them several coal camps almost succeeded as towns (Figure 2) (Hastie 1938:182; Madsen 1974; Madrid Register-News 1975). Among these were Scandia (1906-1940), Phildia (1900s-1915), and High Bridge (which lasted until 1936). Peak production occurred in 1918. Scandia at its height had a population of 1,000 as well as three general stores and a brick and tile yard. Coal from the large-scale mines such as Scandia was not for local trade; rather it was being shipped to various markets in Iowa or was used by the railroad. Conversion to diesel engines lessened the demand for coal, and by the 1950s all commercial production had ceased in this area (Madsen 1974; Woodward Centennial Committee 1983:48-51; Hastie 1938:182).

World War I did not have a major impact on this region, at least it did not deter growth and development. As coal mining peaked during this time period. The greatest impact in this area would have come from this industry.

The next major factor in the development of this region, as well as the whole country, was the Great Depression of the 1930s. This was felt acutely in Iowa with mortgages being called in, small businesses failing, land being sold for taxes and the prices of farm produce falling. A prevalent pattern during this time was the loss of farms to the banks, and the aggregation of small farms into large farm holdings. Aspects of this pattern continues even to the present day.

World War II revived the economy and created a "revolution" in local employment.

> The coal mines were ultimately shut down or their activity greatly diminished. This was partly because the quality of coal was diminishing and equally attributable to the change in the work force. Many of the younger men were joining the armed services and the remainder of the work force could be better employed at the Des Moines Ordinance Plant, which manufactured machine guns and other types of ammunition.... A further change in the work force occurred because of the large number of women who began to find work outside the home...(Madrid 1983:315).

Increasing mechanization also revolutionized the business of farming to the point that small farms became less and less viable in the face of high machinery costs. The pattern of rural development was the consolidation of farm lands into larger units. Small towns either stabilized in population or more likely declined as people moved to cities to find more lucrative employment. The increase in the number of people obtaining higher education levels prompted some of the exodus from rural areas (Ibid.).

Resource Protection and Planning Process

Comparisons with other studies lends support to the preceeding periodization of historical development in the central Des Moines River valley, as well as pointing out areas in need of further research to illuminate settlement patterns and growth. One such study is found in the Resource Protection Planning Process in Iowa (RP3 draft by Elizabeth R. P. Henning 1982). This plan provides tentative study units which have been defined according to chronological breakdowns, regions, major events, trends, and industries (i.e., the context of each period and area). This plan was devised in the hope that it would "influence the planning activities of major land use agencies in the state...by providing a document which can be used in integrating a concern for cultural resources into normal agency planning activities" (E. Henning 1982:I.2, p.1). The purpose of the following text is to relate the RP3 periodization to the study area and to identify potential historic resources in the area that might relate to RP3.

The historic period in this plan is broken into the following study units which specifically concern the central Des Moines River valley region: Early Contact AD 1600-1820, Adventure and Exploitation 1600-1803, Frontier Safety 1820-1851, Early Settlement 1838-1850, Settlement Boom 1850-1860, The Nation Divided 1840-1870, Urban and Industrial Development 1865-1890, Agricultural Change 1865-1890, Mineral Development 1865-1890, Economic Change 1890-1914, War and Aftermath 1914-1930, The Great Depression 1930-1940, and Post-1940.

The period encompassing A.D. 1600-1820 has been noted as a time of early contact and trade with native groups with gradual displacement due to encroaching Euro-American settlers. Groups such as the Ioway, Oto, Omaha, and Missouri were probably in residence or using portions of Iowa on a seasonal basis. After displacement of these groups, Woodland-based Sac, Fox, Winnebago and Pottawatomie moved into the region. Potential sets of historical properties in the Des Moines Valley include Indian villages, inter-group warfare sites, rendezvous locations, trail segments, mine sites, trading posts, missions, and forts. The latter four aspects were a result of intrusive Euro-American trappers and traders in direct contact with native groups (E. Henning 1982:61-65).

The Frontier Safety study unit covers the span from 1820-1851 and involves the presence of the military on the frontier. In the project area, Fort Des Moines served as a protecting for the Indians, as well as a control holding back Euro-American settlement. This occurred from 1843 to 1845 when the terms of the Treaty of 1842 expired, and the Indians were evacuated to Kansas. Other military intrusions included Kearney's excursion up the Des Moines River Valley in 1835. Charles Gaston was a member of this expedition and his observations of the Boone County area later impelled him to settle there (E. Henning 1982:67-68; Gue 1903:161-162; Longworth 1971:5).

Sets of historical properties in the Frontier Safety study unit include Indian villages, treaty sites, battle sites, forts, trail segments, missions, schools and Indian agencies. As noted previously, very little is known of such potential sites in the central Des Moines River Valley beyond Fort Des Moines, Wauconsa and some scattered historical references to Indian contacts with the early settlers. A major obstruction to future research of this

period is the dearth of archaeological data which can be assigned to an Indian occupation in this area (E. Henning 1982:67).

The Early Settlement study unit covers a span from 1838-1850. In the project area this actually begins in 1845 and is perhaps best extended to include the Settlement Boom study unit from 1850-1860. It is noted that the pattern of early settlement was strongly influenced by watercourses. Until the first roads were established, rivers and streams were often the fastest and most efficient means of transportation (E. Henning 1982:74,77). It is further noted that:

> ...the early settlers were overwhelmingly from other frontier areas and most were American-born. New Englanders of British descent and British- and German-Americans from the Middle Atlantic States of New York and Pennsylvania were in the majority. ...Foreign-born settlers were a distinct minority during the early settlement period; they were primarily Irish and German, settling in enclaves and isolating themselves socially from their American contemporaries (E. Henning 1982:74).

This pattern could easily be substantiated for the central Des Moines River valley merely by examining the state census records. Information concerning place of birth and nation of descent is usually provided in these records. It can be noted already that many of the early settlers of this region were American-born and had emigrated from the eastern and southern states. For example, in Boone County, Charles Gaston was from Pennsylvania, Benjamin Williams was from Ohio, and in Polk County George Beebe was from New York. One exception is the arrival of a group of Swedish immigrants headed by Anna Dalander, who settled near Gaston & Williams. They formed an enclave of sorts by founding Swede Point (Big Creek Publishing Co. 1975; Danbom 1908; Goldthwait 1914, Vol. 1: 225; Vol. 2:278).

The predominant factor in settlement location in this area was the availability of timber with easy access to the fertile prairie. Initial settlements were primarily along streams at the points of timber fingering out into the prairie with a few settlements on the river itself. The latter were geared to river trade, and most failed to survive when the roads and railroads were located along the edge of the timber line away from the river.

The Settlement Boom study unit is defined by "intensification of the patterns of the preceding early settlement period" (E. Henning 1982:77). The growth of the city of Des Moines is also well defined within this study unit, as its boom occurred during this time period. The city was located on a major watercourse thereby promoting itself as a trading center and transportation crossroads. The designation of Des Moines as the state capitol in 1857 further strengthened its position and promoted urbanization (Union Historical Co. 1880b:704; 1880a:472-474). Study of census materials, land patents and deeds, as well as archaeological sites would illuminate this settlement boom pattern to see if it prevailed in the project area. Census data also would assist in understanding the impact of other factors such as the Des Moines River Improvement Land Grant, natural disasters such as floods, and economic factors such as the crisis of 1857.

Potential sets of historic properties for "boom" study units as well as those that follow up to the present-day include: residential, industrial,

commercial, manufacturing, governmental, cultural, religious, memorial, educational, and recreational sites; farmsteads, neighborhoods (rural and urban), communities (ethnic, religious, etc.), communications, transportation (networks and associated bridges, ferries, fords) and landscapes (E. Henning 1982:70). Potential sets from these which can be associated with Early Settlement and Settlement Boom in the project area include: residential, industrial, commercial, manufacturing, religious, memorial, and educational sites, farmsteads, communities, and transportation. Some of these have already been located and studied to an extent. However, there are major gaps in the data base concerning transportation networks, the make-up of communities, location of farmsteads and their configurations, location of early schools and their influence upon communities, identification of industrial, commercial, and manufacturing sites and their influence upon settlement patterns as well as their role in the transportation and marketing networks. Study of these relations would involve the creation of archaeological data and its integration with and archival data.

The next study unit involves The Nation Divided and spans the period 1840-1870 including those events leading up to, during, and immediately after the Civil War. Eastern Iowa was most affected by this conflict as the Mississippi River was a major avenue to markets in the south. The frontier in Iowa was disrupted somewhat in that even though the railroad had reached Iowa just before the war broke out, "for all practical purposes, migration to the frontier ceased during the war years" (E. Henning 1982:79). However, the war was not particularily detrimental to the development of Iowa as "exports of food products from the settled portions of the state increased dramatically,...and Iowa moved toward taking its place as the nation's prime agricultural producer" (Ibid.). Future research of the central Des Moines River valley during this time period could address the potential effects of the loss of manpower (i.e., was growth affected?), as well as the potential growth of farm produce markets to areas outside of the immediate vicinity of the river valley. Of course, the major factor in marketing growth did not occur until the railroad was extended into this region after the Civil War.

The Urban and Industrial Development period covers 1865-1890. Aspects of this period which could pertain to the development of the project area include the growth of the railroad, mill consolidation in urban areas, development of educational institutions, and reduction of rural isolation due to communication improvements (E. Henning 1982:84-85). The major factor in the central Des Moines River valley was, as has been mentioned previously, the growth of the railroad networks. This had a tremendous impact on the region as many towns lived or died relative to railroad locations.

There was agricultual change during the 1865-1890 period as well. Even though the definition of this study unit pinpoints northern Iowa, there are aspects which are applicable to the project area. For example, "improved transportation and communication networks lessened rural isolation and tended to diminish ethnic and social differences" (E. Henning 1982:87). The changes which occurred in ethnic communities such as Swede Point are a possible avenue of research to help understand this aspect of the area's development. Improvements in agriculture, including mechanization, and changes in plant and animal breeding stocks impacted not only land use patterns but diversification as well. A trend toward specialization began because of these improvements (E. Henning 1982:87-88). Also during this time period there was an intensive

development of the mineral resources of Iowa. This study unit has particular applications to the project area. It is defined as the "boom period of coal and clay" (E. Henning 1982:90).

> The development of these extractive industries had important effects on the development of towns and cities in the mining areas. Miners in some cases were from specific ethnic groups. This led to the formation of enclaves...in towns during the boom period (Ibid.)

The coal industry had a major impact on the central Des Moines River Valley even into the 20th century. During the 1865-1890 period it was centered in the Boone/Moingona area but shifting to the Madrid/northeast Dallas County area in the early 1900s. Towns such as Coal Valley, Incline, Phildia, Scandia and High Bridge grew and declined along with their associated mining operations.

The clay industry also boomed after the Civil War, and this was another factor in the development of this river valley. Local kilns for the manufacture of pottery, bricks and drainage tiles have been studied, some in great depth. These include the Noah Creek kiln (13BN111) in Coal Valley, the Moingona Pottery Works (13BN120), and the Flint Stone Pottery (13BN132). The latter two are located in the Moingona vicinity. Iowa State University students have written master theses evaluating these sites (see Annotated Listing of Repositories, Appendix F). Other kilns known in and around the project area but lacking the same in-depth research include the following: Franklin Kiln (13BN131), Griffee Pottery (13BN138), North Division Street kiln site (13BN142), and a brick and tile kiln (13BN104) (Gradwohl 1974:100). It has been noted that:

> ...potters were among the early settlers in the Des Moines Valley, and that their industry was integrally associated with coal mining, steamboating, and other commercial efforts clustering along the river. Although brick and tile operations continued to be important in Iowa, the pottery industry waned before the turn of the century" (Ibid.)

Even though some of these kiln sites have been studied in depth, there is next-to-nothing known about the markets for their wares or the transportation networks associated with those markets. A study utilizing the ceramic assemblages already collected from the entire project area could elucidate an understanding of the marketing and transportation networks of this time period. Intersite comparisons with assemblages from kiln sites and other historical sites southeast of Des Moines in the Red Rock Reservoir area (e.g., the Coalport Kiln, 13MA103) would aid in the understanding of the networks involved in this region.

The RP3 singled out the Mineral Development study unit in order to illustrate the implemention potential of this plan. Specifically, an assessment of the quality and quantity of existing inventory and/or survey data on the mining industry in Iowa was conducted. It was concluded that the existing data are "woefully inadequate" while at the same time the "extant historical record relating to this study unit is very rich" (E. Henning 1982:147-148). Gaps in the data base also were examined, and it was concluded that "until basic inventory data are compiled for the study unit, it will be

very difficult to delineate data gaps in the coal mining section (as well as the other extractive industries) of this study unit" (E. Henning 1982:148). It was noted that much of this basic information is readily available in, "county and personal histories, church records, newspaper stories and advertising, manuscript census records, property tax and transfer records, and many other historical sources." (Ibid.)

Archaeological information from Buxton, an extinct coal mining community in Monroe County (Gradwohl and Osborn 1984), has provided a wealth of data concerning the daily economic and social lives of its occupants. E. Henning (1982:144) notes that, "...further research [of this type] could result in comparisons of such variables as social status, wealth, and social and economic networks of mining town inhabitants."

The Saylorville Lake project area presents a good opportunity to fill in some of these gaps, as well as to provide comparative information pertaining to the above research topics. The fairly recent nature of the coal mining industry in the Madrid vicinity indicates the possibility not only of a wealth of archival data in the form of photographs and personal histories (some of which already have been printed in <u>Trail Tales</u>, the <u>Madrid Register-News</u> Centennial Series, and the <u>Ogden Reporter</u> Centennial Edition), and coal mine company records (many of which likely still exist), but also of the potential wealth of oral historical data from the individuals, and/or their descendents, who worked and lived in these coal mining towns.

The study units spanning the years after 1890 visualize Iowa history within a national context, as it is during this time period that Iowa becomes, "...totally integrated into the socioeconomic structure of the nation as a whole" (E. Henning 1982:92). Henning notes that the, "...impact of national events, no matter how powerful does not occur with the same intensity or direction everywhere" (Ibid.); therefore development from one region to the next may differ in some aspects.

The first study unit of this time period is Economic Change (1890-1914). This is defined as a period which saw, "...increasing urbanization and integration of the state into the national economy" (E. Henning 1982:94). Furthermore:

> much of the internal migration during this period was from other urban areas to the rapidly growing cities of eastern Iowa, plus Des Moines and the Missouri River ports. Other migration trends saw movement from eastern and southern Europe and migration of blacks from the rural south; again, much of this movement was to urban areas (Ibid.)

It was also during this period that agriculture becomes increasingly specialized with an emphasis on corn-hog-cattle production. The railroad continued to have a major impact on the development of towns in the project area, as well as contributing to the coal mining boom in the Madrid/Northeast Dallas County area during this time period and into the next. Also, the distinction between the urban Des Moines area and the basically rural central river valley became more pronounced as the 20th century arrived.

Potential avenues of research during the Economic Change period include the study of the changing patterns of farmland use, as well as the aggregation of small farm units into larger ones. This latter pattern intensified as the 20th century progressed. Study of the effects of such changes upon the communities in this area could lead to an understanding of the networks between rural farmsteads and their support communities, as well as the effect of the community upon its environs as far as ethnicity, religion, education and traditions are concerned.

The next study unit encompasses 1914-1930, War and Aftermath. This is defined by the impact of WWI upon Iowa. Effects of the war were first felt in the form of high prices for farm products. These high prices precipitated increasing land speculation, which collapsed when farm prices plummeted after the war. Land prices fell and speculators suffered great losses (E. Henning 1982:95). This pattern could easily be studied through examination of deed and mortgage transactions during this period. Agricultural specialization increased through the war years; however, in the aftermath of the drop in farm prices, farmers, "...now aware of the vulnerability of the single cropping system, once again chose to run more diversified operations." (Ibid.)

The rural-urban migration continued, aided by an increasing emphasis on education, as well as the mobility facilitated by the automobile. For the first time in the years after 1910 the rural population began to noticeably decline (E. Henning 1982:95-96).

> The twenties saw the development of the farmer as a modern political force. This was due in large part to the wide circulation and importance of Iowa farm publications. This increasing political importance led to increasing interest on the part of the federal government; Agricultural Adjustment Administration efforts to stabilize hog prices were forerunners of larger federal programs to come (E. Henning 1982:96).

The Great Depression (1930-1940) defines the next study unit, and it had a major impact on Iowa, as well as the entire nation. The stock market crash of 1929 and ensuing economic depression caused the loss of many Iowa farms to banks and other lending institutions. Foreclosures and tax sales became a commonplace occurrence. Small farms were increasingly aggregated into large farm units. There was a continued rural population loss which contributed to an "impoverished rural setting" (E. Henning 1982:97). Urban areas, such as Des Moines, continued to grow as did the problems which accompany such growth (i.e., overcrowding, crime, sanitation problems, etc.). Also, the "...seeds were sewn for rural consolidation in terms of farm units, schools and other social units. A trend which was to continue." (Ibid.) The Great Depression rather quickly reshaped the face of the Iowa rural landscape. Studies of the changing patterns in farm holdings and small communities could be examined by utilizing archival as well as archaeological information.

The final study unit spans 1940 to the present day. This period is defined, so far, by "continuing increases in big business, communication networks, and educational advantages levels differences." (E. Henning 1982:98)

> The biggest changes occur in rural areas where consolidation of farms, churches and school districts are widespread.... Farm

production is increasingly that of monoculture and petrochemical fertilizers, herbicides and pesticides along with larger and more powerful machinery resulting in huge farm surpluses and increasing soil erosion and deflation (Ibid.)

Urban areas continued to grow at the expense of the rural areas. Educational institutions expanded and flourished during the 1950s and 1960s only "to be faced with diminishing student populations and deteriorating equipment in the late 1970s" (E. Henning 1982:98).

This unit could eventually be subdivided into various study units defined by WWII, which helped to revitalize the nation's economy, the "pre-Sputnik" era (1940-1957); the "Great Society"; the Vietnam War and pre-1973 oil embargo era (1958-1972); and the post-1972 period which to date has been defined by such factors as the petroleum scarcity (E. Henning 1982:98-99).

After WWII the central Des Moines River Valley felt its greatest impact from the construction of the Saylorville Reservoir in the late 1960s-1970s. Not only did this physically change the nature of the landscape but it remolded the make-up of communities and redefined settlement patterns. An interesting result of this construction is the opportunity now presented to small towns such as Boone, Madrid, and Polk City to prosper and grow again as they each did once before because of the railroad. These communitiies have already begun to change as they increasingly become geared to recreation-related businesses.

Study Subjects & Recommendations

Understanding of the historic period in the central Des Moines River valley could be greatly improved by undertaking research in five areas. The five areas—artifact collections, archival research, oral histories, architectural studies, archaeological investigations—are discussed with examples of how such studies might be pursued.

1) Artifact Collection - Iowa State University

The historic artifacts collected from sites throughout the Saylorville Reservoir area have been catalogued and stored by Iowa State University. Their published analyses of many archaeological remains provides little information that is of use for assigning chronologies to the historic archaeological sites. The descriptive terminology utilized in the published sources is inadequate and at times erroneous. For example, the use of the term "feather-edge" to describe what is actually shell-edge decoration is a misuse of the generally accepted terminology. Feather-edge decoration is a molded motif found primarily on Creamwares and was popular from ca. 1765-1790 (Hume 1978:125). Shell-edge, on the other hand, was a popular motif which combined hand-painting, impressing, and scalloped rims, although later shell-edge could have shallow or no impressing and unscalloped rims. This motif can be found on Creamware (rare), Pearlware, Whiteware and Ironstone and was most popular from ca. 1780-1860s (Hume 1978:125-126; Miller n.d.).

Another shortcoming in the descriptions as they now stand is the inconsistency of the classification of ceramics. For example, the use of "Transfer Ware" as a classifying term is inconsistent as Transfer Print is a decorative technique not a ware-type, if the defining criteria of the classification is ware-type. Transfer print can occur on refined stonewares (limited use), Porcelain, Creamware, Pearlware, Whiteware, and Ironstone, all of which denote a wide range of different ware-types and date ranges (Hume 1978). The only time that "Transfer Ware" would be appropriate is when the classification system is based upon decoration techniques as a primary defining criterion. Such a study has been conducted by George Miller (1980) wherein he classified 19th century ceramics according to the terminology utilized historically by the manufacturers and the consumers, rather than by the ware-types as defined by archaeologists. This terminology was based upon decoration techniques, and the key factor in this study was the consistency of his classification. If such a system is to be utilized in describing an assemblage, then the defining criteria should be identified and their usage explained.

One group of artifacts well described in the ISU inventory is stoneware. There was obviously a more indepth analysis of accepted stoneware descriptions, manufacture terminology, and classification. This is a result of the analysis conducted on three kiln sites (13BN111, 13BN120 and 13BN132) for ISU master thesis work (Reynolds 1970; Schulte 1974; Schroeder 1979).

It should be a top priority of future studies to reanalyze the historic artifact collections in order to consistently and adequately describe what is actually there. This would enable the definition of tighter site chronology as well as a more accurate reflection of site composition. For example, 19th century glass manufacturing underwent a number of technological revolutions which are often identifiable in the attributes found even on fragmentary pieces (see Lorrain 1968). As the ISU descriptions of the glass assemblage now stands, they are unusuable in regard to the identification of time-sensitive attributes. A reanalysis of all the artifacts would provide not only a better description of the historical archaeological chronology of the project area, but it would provide a body of data that could be utilized on a comparative basis within this river valley, as well as with other regions.

The following represents the results of a cursory reanalysis of the surface collections from 13PK109 as an illustration of the potential of an indepth reanalysis of the entire project collection. Note that this example does not include all of the stoneware recovered from this site, as a brief re-examination could not improve upon the published descriptions. This reanalysis will provide only chronological information, not functional characteristics; a reanalysis of the entire assemblage would also provide important functional information.

The analysis:

Site 13PK109 represents a portion of the area once occupied by the 19th century town of Corydon and later the addition of New Corydon (Figure 4, 15). As originally defined, the surface collection of 13PK109 came primarily from the New Corydon addition and was obtained in three separate reconnaissance

periods: -1967, 1973, and 1979-1980. The majority of artifacts were recovered in 1967 and 1973, and the last collection came partially from the Corydon area to the north (Gradwohl and Osborn 1973:27-28; personal communication, Nancy Osborn).

Corydon was platted in 1853 along the east (left) bank of the Des Moines River just south of Polk City (Figures 16, 17). New Corydon was added to this plat in 1855. In its early days, Corydon had a ferry landing, school, store, sawmill and blacksmith shop. The town failed to survive after other avenues of transportation besides the river were established. The inability to make the Des Moines River reliably navigable added to its decline. The location of railroads away from Corydon finally sealed its fate in the late 1860s-1870s (Denny and Pratt 1973:11,15; Union Historical Co. 1880b:346,635).

No indepth archival research was conducted as part of this reanalysis of the 13PK109 artifacts due to time and budget constraints. This cursory reexamination is presented only as an example of one of the potential research objectives which remain viable for the Saylorville Reservoir project.

Of the 445 ISU artifacts reanalyzed from 13PK109, 80% or 354 artifacts were identifiable as to time range (Table 2). These ranges were taken from the following sources: Lorrain 1968, Munsey 1970, Miller n.d., Brown 1982, Hume 1978, South 1977, Nelson 1968, and Price 1979. The Table 2 data fall into time ranges all indicate the likelihood of an 1840s-1870s occupation, even though certain artifacts could also be found in a later context. Four percent of the datable assemblage comes from a post-Corydon/New Corydon occupation, while approximately 95% could date from an 1840s-1870s or 1880s context. Less than 1% came from a pre-1840 context. The latter artifacts probably represent items of an earlier period brought into this area by the early settlers in the 1840s or 1850s.

Table 2
Ages of Artifacts from Historic Corydon

	collections				
	ISU	CAR-SMSU			
		North	South	East	Tip
period n=	354	12	43	20	26
pre-1840	<1%	8%	7%	-	4%
pre-1870	<1%	50%	2%	-	4%
1840-70	22%	-	21%	35%	11%
1840-80	8%	-	26%	-	-
1840-1900+	30%	25%	-	50%	27%
1850-1900+	-	-	21%	5%	31%
1860-1900+	35%	17%	14%	10%	23%
1870-1900+	1%	-	2%	-	-
1880-1900+	1%	-	5%	-	-
1890-1900+	<1%	-	-	-	-
post-1900	1%	-	2%	-	-

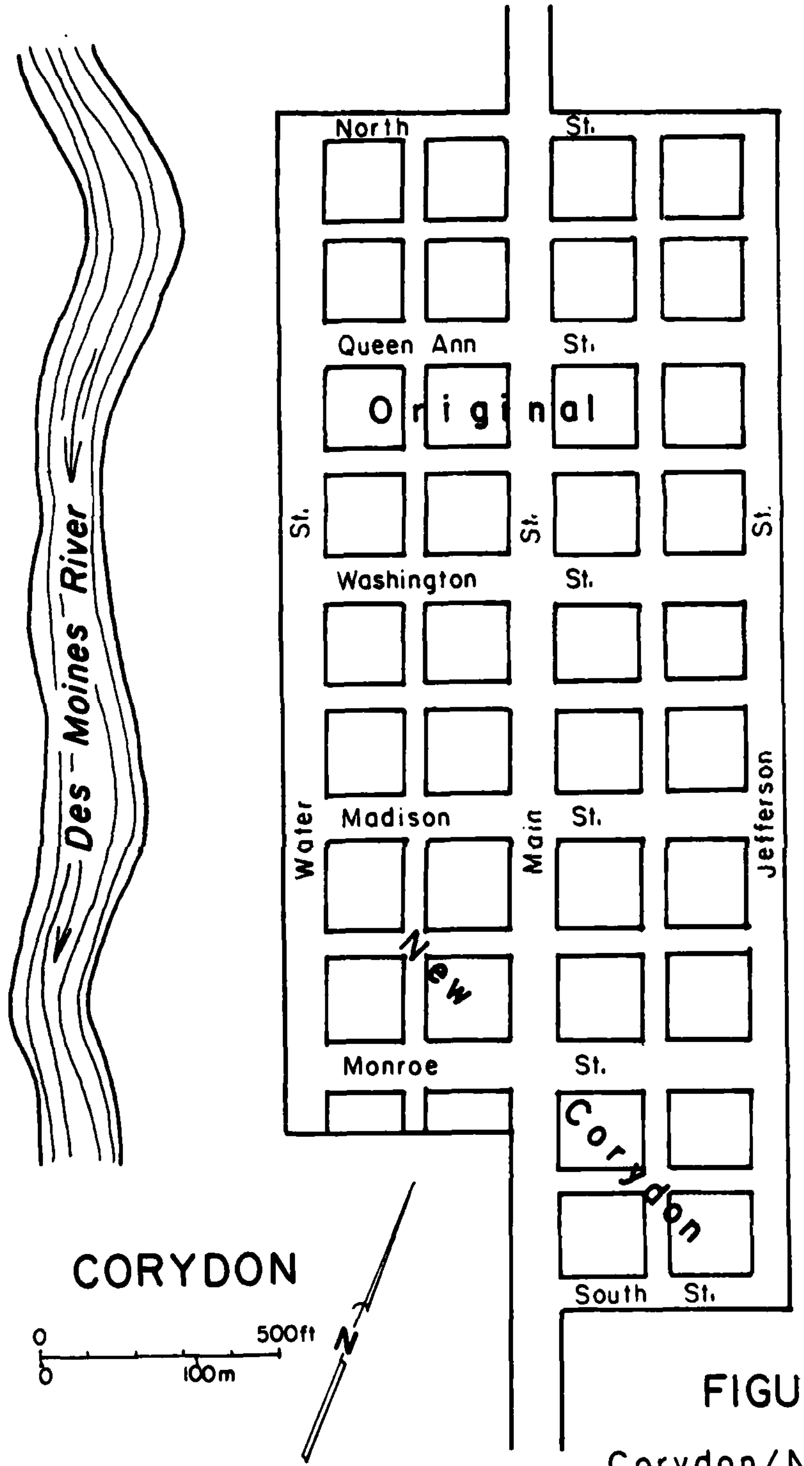


FIGURE 16

Corydon/New Corydon Plat

(from Polk County Plat Book 1914)

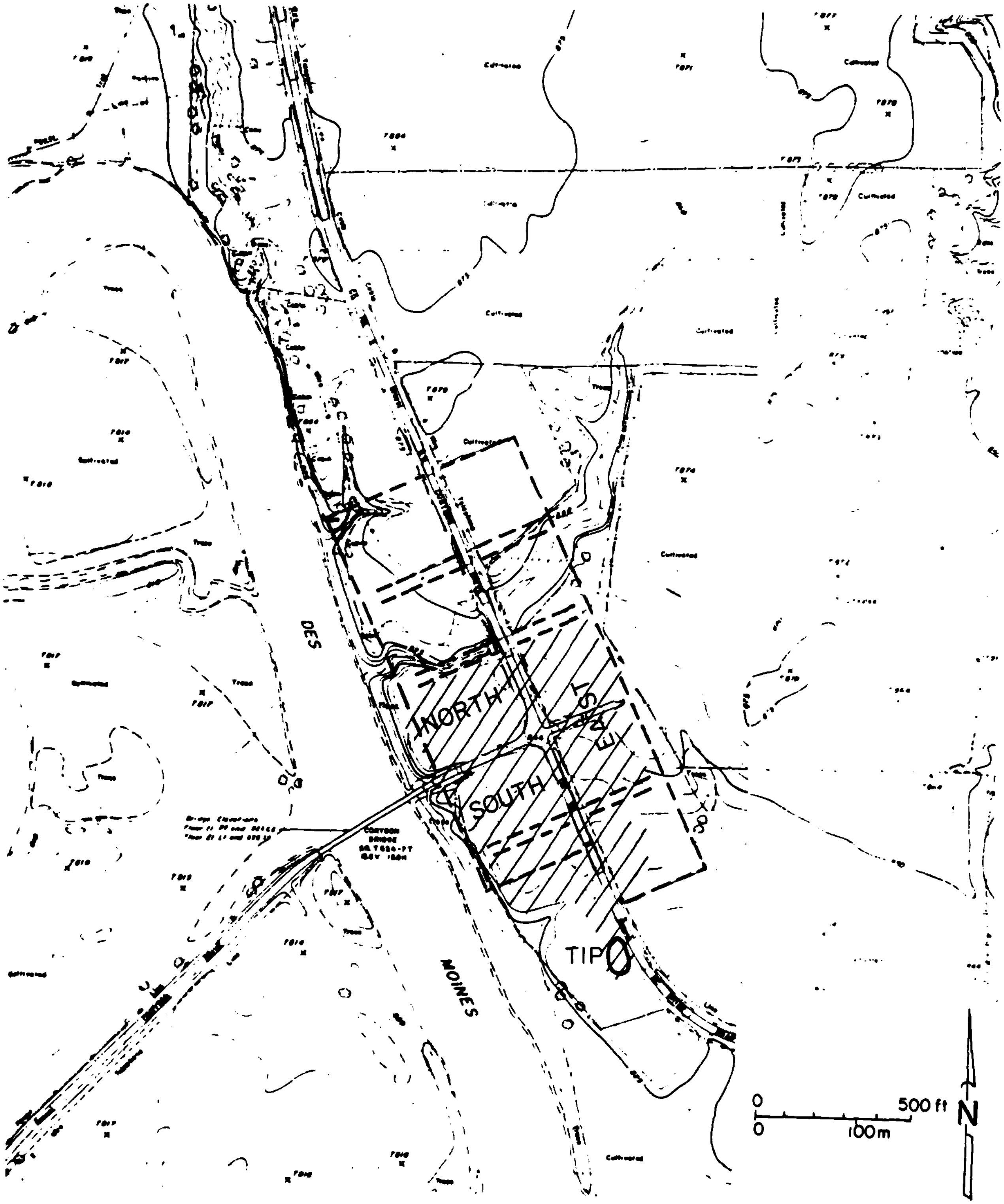


Figure 17: Corydon (13PK109) surface collection map; original plat of the town is superimposed on the five foot contour map (town plat from Polk County Plat Book 1902).

An additional selective surface collection of ceramics and glass was made on 13PK109 by the Center for Archaeological Research in October 1984 as part of this study. A total of 190 artifacts were recovered from four different collection areas designated 13PK109 North, South, East, and Tip (Figure 17; Table 2). The North area corresponds to the western portion of Corydon along the river, and the East area corresponds to the eastern portion of Corydon. The South area covers a portion of New Corydon to the south of what was once Madison Street, and the Tip area corresponds to portion south of New Corydon (Figures 16, 17). Nineteen artifacts were recovered from the North area, 28 from the East, 62 from the Tip, and 81 from the South area. Of the 190 total artifacts, 53% or 101 artifacts were identifiable as to time range. Of the 19 North area artifacts, 12 (63%) were datable. The East area had 20 out of 28 artifacts (71%) identifiable to time range, and the Tip collection area had only 26 out of 62 artifacts (42%) that were identifiable. This was due to a higher number of stoneware fragments being recovered from this area than in the North and East areas. The largest collection came from the South area, but out of 81 artifacts only 43 (53%) were datable. This too is a result of a greater number of stoneware fragments being recovered. This area not only had the greatest number of artifacts but also the widest range of dates, indicating an area utilized during the life-span of Corydon/New Corydon and afterwards.

Keeping in mind that this was only a <u>cursory</u> re-examination of 13PK109, it is noteworthy that there is potential for a greater refinement in dating the historic occupation at 13PK109 and other sites in the reservoir. Time ranges taken from artifacts can be refined even further when integrated with indepth archival research and archaeological investigations. Site 13PK109 has been impacted by rising lake waters, and this impact coupled with numerous reoccupations of the site and past archaeological work have had serious negative impacts on the integrity of the site. Future archaeological work is not recommended for 13PK109, but many other historic sites, even negatively impacted ones in the reservoir could provide similar types of detailed information if subjected to precisely controlled surface collecting and careful subsurface excavation. Through such work actual structure locations could be defined, dated and matched later with archival evidence.

2) <u>**Archival Research**</u>

This is one area which is practically untouched as far as the historic archaeology for the Reservoir is concerned. Little indepth research of the historic record has been conducted, except for the thesis work by Allen Schroeder (1979) and Barbara Schulte (1974). Both provide important information concerning precisely the development of the pottery industry in the Moingona/Coal Valley vicinity. Beyond this thesis research the only other reported information has been gleaned from county history books and other historical references (see Gradwohl 1974; Gradwohl and Osborn 1973a).

The following is presented as an example of the potential for historical research in the Valley. It concerns one site in the project area (13BN148) and is an integrative study utilizing archival and archaeologicial data. The constraints of time and budget limited the depth of analysis which could be conducted; therefore it must be noted that this brief study barely scratched

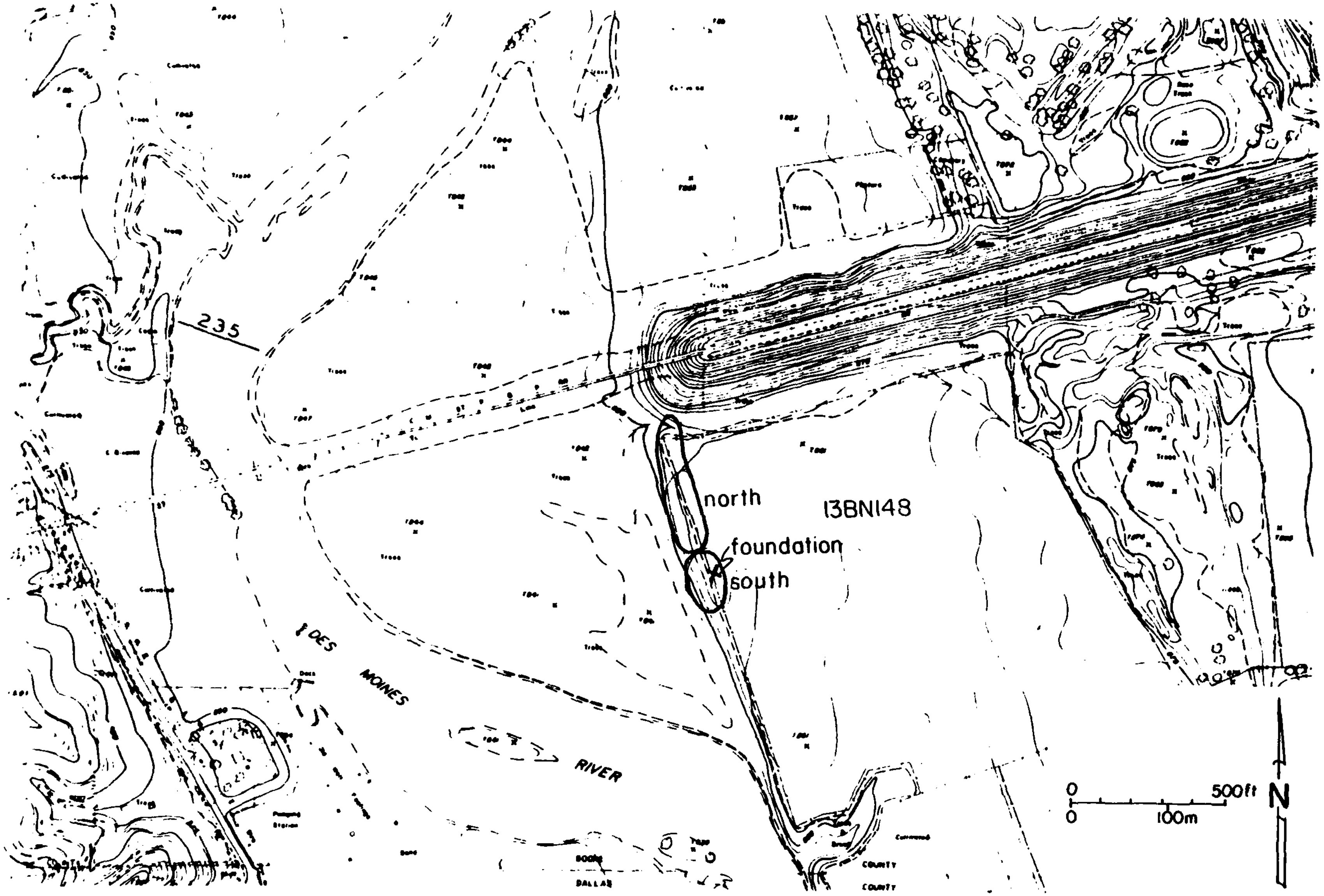


Figure 18: Site 13BN148 surface collection areas and foundation on five foot contour map.

the surface of the information available in both the archaeological and archival records.

Site 13BN148 contains both prehistoric and historic components and was initially described as a prehistoric site located:

> above the left bank of the Des Moines River on a terrace at an elevation of 860-865 ft. NW1/4 SE1/4, and extends into the SW1/4 SE1/4 of Section 34, T82N, R26W. Material was recovered from an area of 1-2 acres. (Gradwohl and Osborn 1975a:173)

A 1978 surface collection by ISU recovered historic artifacts primarily along the eroding edge of the terrace at 13BN148. A selective surface collection of the historic component was conducted as part of the present study in October of 1984. Two concentrations were discerned: a bottle and refuse dump along the northern portion of the eroding bank, and an exposed (possible house) foundation and associated artifact scatter to the south of the dump area also along this bank. These areas were designated as 13BN148 North and 13BN148 South, respectively (Figure 18).

Artifact Analysis:

The Iowa State University surface collection from 13BN148 contains a total of 39 historic artifacts. Of this, 27 (69%) are bottle glass, seven (18%) are utilitarian ceramics (e.g., stoneware crocks, jugs, etc.), three (8%) are ceramic tablewares (e.g., whiteware plates, cups, bowls, etc.), one (2.5%) is a ceramic doll fragment, and one (2.5%) is a metal tableware piece (i.e., a spoon). Of the 39 artifacts, 28 (72%) are identifiable to time ranges: 4% 1830-1870, 21% 1840-1900, 25% 1880-1903; 7% post-1870, and 43% post-1900. As the majority of the items in this assemblage consist of bottle glass, it appears that this surface collection concentrated on the bottle and refuse dump area. The results also indicate that the dump was utilized primarily from 1880 to the early 20th century.

The 1984 CAR-SMSU surface collection consists of 152 historic artifacts. It is a selective collecton that gathered only those items which appeared to be diagnostic. Forty-nine items were recovered from the North area, and 103 were from the South Area (Figure 18). The North area artifacts consisted of 76% bottle glass, 16% utilitarian ceramics, 4% ceramic tablewares, 2% miscellaneous ceramic items and 2% metal tableware.

Of the 49 North area artifacts, 40 (82%) proved datable. Of these, 20% could be assigned to an 1840-1900 date range with one artifact specifically in an 1840-1870 span; 40% to an 1870-1900+ range; and 40% to a post-1900 range. This indicates that the dump was utilized primarily from the 1870s to the early 20th century. Most of the whole bottles observed on the surface were 20th century in date, and many of these were left <u>in situ</u> due to the logistics of transporting and curating a large bottle collection.

Of the 103 artifacts collected from the South area of 13BN148, 96 (93%) proved to be datable. Of these, 8% are pre-1840, 3.5% pre-1860, 60% 1840-1900 (with 44 artifacts 1840-1870 and 14 artifacts from 1840-1900); 25% 1870-1900+, and 3.5% post-1900. The functional categories of the South area assemblage

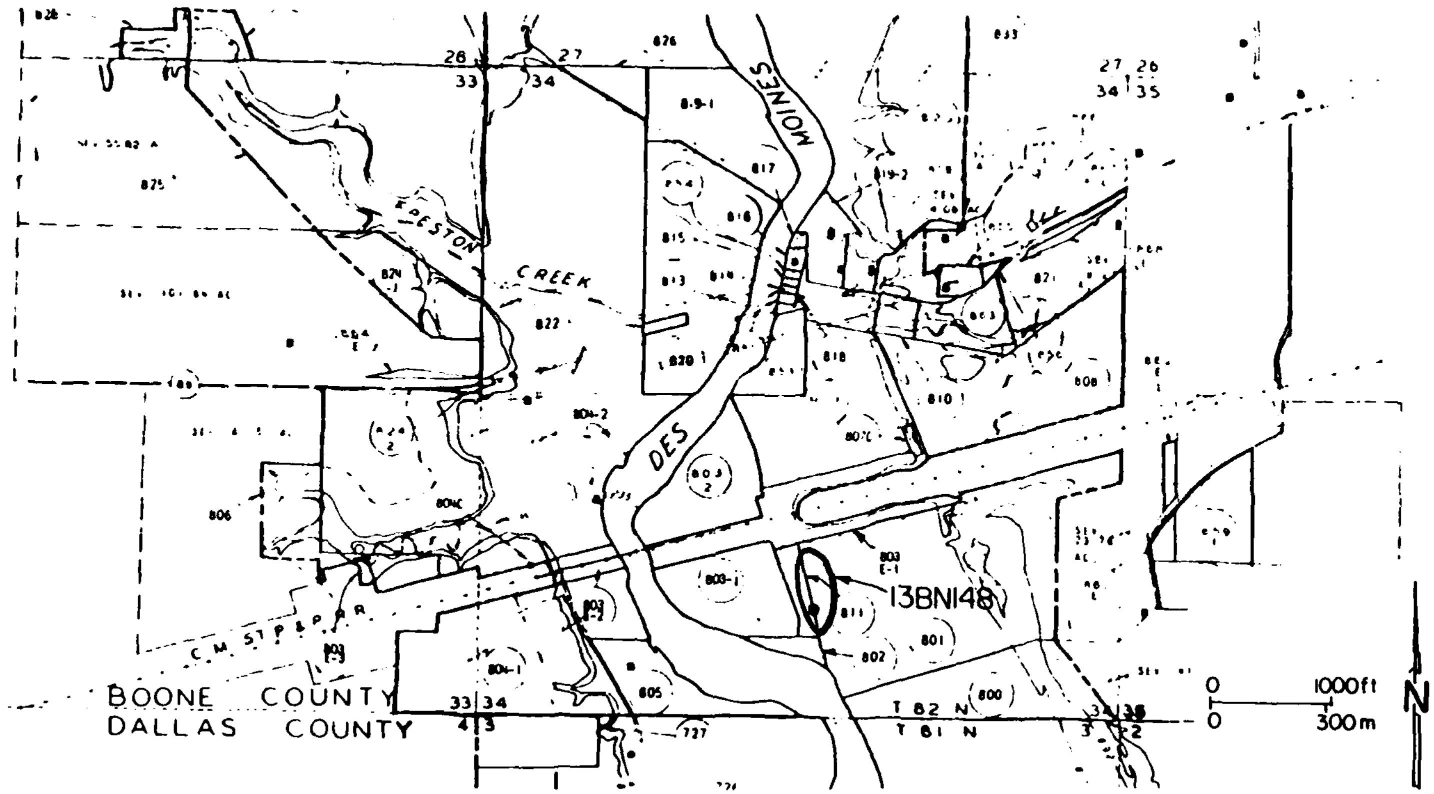


Figure 19: Site 13BN148 showing tract numbers (from Corps of Engineers real estate records 1967).

breakdown as follows: 55% ceramic tableware, 36% bottle glass, 5.2% utilitarian ceramics, 1% miscellaneous ceramic items, 1% metal tableware, 0.6% glass tableware, 0.6% nails and 0.6% metal hardware. This data indicates that the south area dates primarily from 1840-1870s with some evidence of either a later occupation and/or overlap with the north dump area activity. The emphasis on ceramic tableware as well as the addition of structural and other domestic-type artifacts points to a probable residential function for the south area.

The suspected foundation consisted of large, flat limestone slabs situated in a row running north-south and eroding from the bank. Some are displaced by erosion, but others appear to be in situ. One stone has definite squared edges, and it may have served as a cornerstone. The possible foundation measures approximately 226 meters (745.8 ft.) south and slightly east from the east end of the present railroad bridge (Figure 18). This places this portion of the site on the edge of Saylorville Tracts number 801 and 811 in the NW1/4 SW1/4 SE1/4 of Section 34, T82N, R26W, Douglas Township Boone County (Figure 19). Tract number 811 consists of 2.53 acres and had no buildings or cropland at the time of acquisition for the Saylorville Reservoir. In the Corps of Engineers acquisition file for this tract it was noted that:

> From a study of the original plat of Boone County, it appears that the subject tract (number 811) may be owned by the State of Iowa, as at least part of the land was in the original Des Moines River Channel.

Therefore, attention will be focused in this study upon Tract number 801 instead of number 811.

The land deed search for 13BN148 became a complex endeavor, since there is some confusion over the original entries for Section 34. Charles W. Gaston is given credit in most history books for being the first permanent settler in Boone County. His original claim on which he built a log cabin in 1846 is described generally in some sources as being in Section 34 and more specifically in others as being in the SW1/4 of this section. Recent references note that this claim was where the Art Whitmore farm was located. This corresponds in part to Tract number 800 (Figure 19), and would be in the SE1/4 of Section 34. This claim also extended south into Dallas county (Sundberg 1979; Union Historical Co. 1880a:298-299; Proescholdt 1976:37).

Benjamin Williams is reported to have settled on a claim next to Gaston's later in 1846 or 1847. It was on a portion of this land that Williams laid out the town of Elk Rapids in 1851. By 1855, Elk Rapids supposedly could boast of three stores, dwellings for 150 people, a post office and a mill on the west bank of the river. Elk Rapids began to decline after a flood destroyed the mill in 1857 (Figure 19) (Goldthwait 1914 Vol. I: 227-228).

Examination of the deed records reveals some contradictions concerning original ownership of this piece of land. Transfer Book A (Index) lists for Section 34, T82N, R26W, only the following entries concerning the SE1/4:

C. W. Gaston SE1/4 SE1/4 and SW1/4 SE1/4
B. Williams NE1/4, NE1/4 SE1/4 and NW1/4 SE1/4

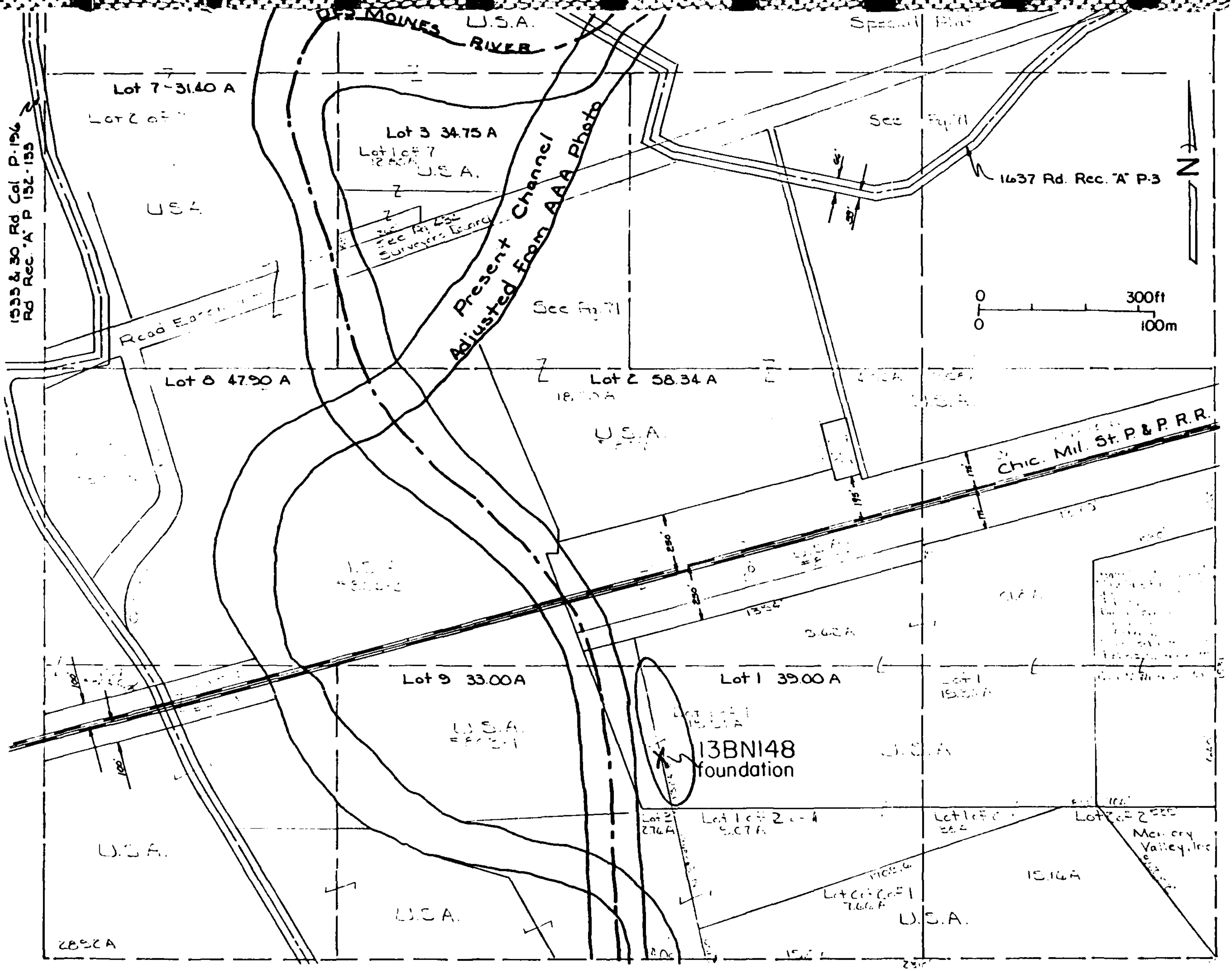
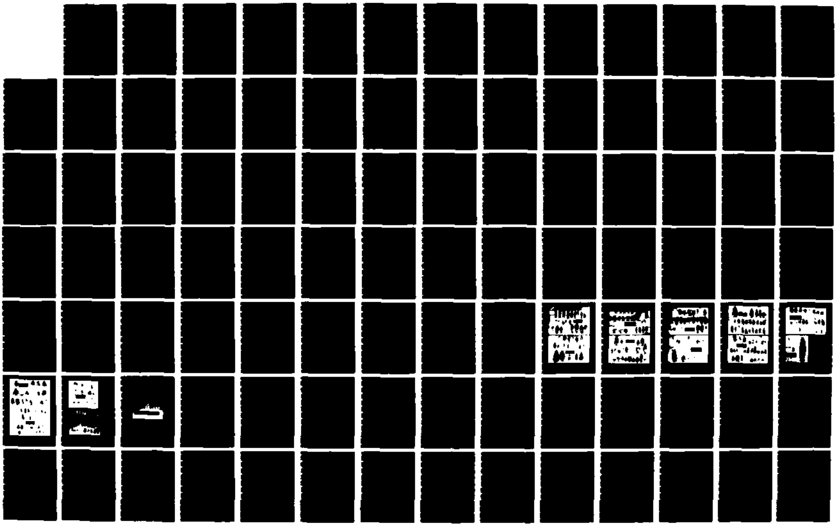
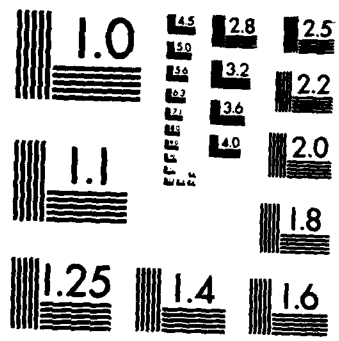


Figure 20: Site 13BN148 showing property designations (from Plat Book E, 1984); note former river channel.

AD-A162 959 INTERPRETIVE OVERVIEW OF CULTURAL RESOURCES IN SAYLORVILLE LAKE IOWA VOLUME 1(U) SOUTHWEST MISSOURI STATE UNIV SPRINGFIELD CENTER FOR ARCHAEOL 2/4

UNCLASSIFIED D W BENN ET AL SEP 85 DACW25-84-C-0035 F/G 5/6 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

According to these entries, it would appear that Gaston had claim to the area where the possible housesite at 13BN148 is located. However, this transfer index does not list any dates, nor the book number or page number where these transactions are fully recorded.

The Original Entry Index lists only the following entries concerning this area:

1850 -Benjamin Williams E1/2 NE1/4, SW1/4 NE1/4 & Lt.4

1851 -Samuel B. McCall E1/2 fractional SE1/4, Lt.1, & Lt.2

According to the Original Land Survey map completed by the General Land Office in 1848, Lots 1 & 2 at that time comprised the SW1/4 SE1/4, NW1/4 SE1/4 and a portion of the NE1/4 SW1/4. This would indicate that McCall was the original claimant for this land instead of Gaston. The latter was not even listed under Section 34 in the Original Entry Book, just as McCall was not listed in Transfer Book A. A check of the military land grants for this area (for which Gaston would have been eligible) did not provide listins for this parcel of land.

The search becomes even more confusing because Benjamin Williams later is shown as owning the northern portion of the SE1/4, as well as the NE1/4 of Section 34, but a transfer of land from McCall to Williams could not be located during this study. The confusion becomes compounded because the original land survey lot number designations were changed later to the "lot of lot" number designations shown on Figure 20. Deed records after the original deeds are either described by the later lot numbers or by surveying descriptions (i.e., so many chains and links, etc.), and the final deed transactions refer to the land according to the designated Saylorville Tract numbers (Figure 19).

Therefore, the deed records of both Tracts number 800 and number 801 were traced for this study to attempt to sort out the confusion. The results of this search are presented in Tables 3 and 4. Unfortunately, as can be seen in these tables, the property boundaries changed many times, and original land parcels did not remain the same size or configuration.

It appears the Samuel McCall held the original claim in 1851 to the land on which the 13BN148 housesite was located. In the following year he sold some of this property to Gaston but not the parcel with the housesite. It is possible that he sold the remainder to Williams around this same time period, but the transaction has not been located as yet. Basically, from about the 1850s to 1873 this land was Benjamin William's, and after 1873 it became the property of John and Anna Dalander. There are some historical references to the effect that Williams had sold this property to Dalander in the 1860s, and this may actually have been in the form of a lease which was changed to a formal bill of sale in 1873 (Woodward Enterprise, August 8, 1912, article entitled "Old Burial Ground is Historic One"). The mortgage records were not researched due to time limitations, so this lease may be recorded in these records.

The question remains, who built this structure, and to answer this more questions arise. Specifically, the site dates primarily from 1840-1870, and as this area was not settled until 1846 this can be amended to 1846-1870. It appears that one of the early settlers had to be connected with this structure: either Gaston, Williams, or McCall. Samuel B. McCall can be

TABLE 3

Tract #801, Section 34, T82N, Douglas Township, Boone County

Grantor	Grantee	Date	Description	Acreage	Price	Deed Type	Land Deed Book No.	Page No.
U.S.A.	Benjamin Williams*	1850	E½ NE¼, SW¼ NE¼ and Lt. 4 of Section 34	154 15/100	- - -	Patent	21	606
B. Williams	John Dalander (heir of)	1873	Commencing at the one quarter section part on east line of Section 34, thence south 30 chains 40 links to the NE corner of a piece of land of Charley Gaston's (37 41/100 acres) thence west 40 chains to west line of SE¼ thence north one chain and 50 links to river then north 2.° west 16 chains and 50 links then east 1 chain and 6 links then NE "east" 2 chains and 20 links then north 9 west 3 chains and 93 links then N 25½ W5 chains and 57 links then N65½ E 8 chains and 25 links then south 80½ E 4 chains and 75 links to a point 9 chains and 33 links north of the center of Section 34 then S80½ E40 chains and 69 links to the east line of said section then S 2 chains and 70 links to beginning. [transaction roughly corresponds to Tracts #801, 807 and parts of 808 and 853 as well as a small pc. of land in Section 35].	167 78/100	2500.00	Warranty Deed	14 14	87-88
Anna J. Dalander et al (John- her husband)	Milwaukee Land Company	1912	Lt. 1 of SE¼ SE¼, Lt. 1 of Lt. 1, Lt. 2 of Lt. 3, Lt. 1 of Lt. 2 (except Elk Rapids cemetery), NE¼ SE¼, Lt. 14 of SW¼ NE¼ and Lt. 6 of SE¼ NE¼. [Lt. 1 of 1 is where the possible 13BN148 housesite is located]	- - - -	23,057.32	2 Warranty & 3 Guardian Deeds	151	520

* Note original does not include Tract #801 - transaction from McCall to Williams could not be located.

TABLE 3 (continued)

Track #801, Section 34, T82N, Douglas Township, Boone County

Grantor	Grantee	Date	Description	Acreage	Price	Deed Type	Land Deed Book No.	Page No.
Milwaukee Land Company	A. A. Whitmore	1948	Lt. 1 of Lt. 1, Lt. 1 of SE¼ SE¼, Lt. 1 of Lt. 2 lying next to RR r.o.w. and NE¼ SE¼. (includes W 12 acres of the NW¼ SW¼ of Section 35).	81.14ac	3245.60	Warranty Deed	203	378
A. A. Whitmore	George P. Whitmore	1948	Commence at SE corner of Section 34 west 2310' then N 13° 38' W150' to point of beginning then continuing N 13° 38' W1324.5' to angle bar then NE along RR r.o.w. 1354', then N75' then NE 1370', then south 1531' to NE corner of Lt. 2 of Lt. 1, then west along the north line of said Lt. 2 706.1', then SW 1709.6' to point of beginning. (This corresponds to Tract #801 plus some land that was not given a tract number).	76.12ac	$1.00	Warranty Deed	307	249
George P. Whitmore	U.S.A.	1968	Tract #801	62.30ac	- - -	Condemnation	Transfer Book P	76

TABLE 4
Tract #800, Section 34

Grantor	Grantee	Date	Description	Acreage	Price	Deed Type	Land Deed Book #	Page No.
U.S.A.	Samuel B. McCall	1851	E½ SE fract. ¼, Lot. 1 & Lot 2*	$177^{34}/100$	- - -	Patent	318	221
McCall	Charles W. Gaston	1852	Beginning at SE corner of Section 34 thence west along south line of this section, 35 chains intersecting river meander line thence N13° 38', W along meander line 10 chains and 61 links thence east 37 chains and 50 links thence south 10 chains and 32 links to place of beginning. [This corresponds to Tract #800 plus a little more to the east and north of this tract]	37 41/100	100.00	Warrenty Deed	A	58
Gaston	Peter Spencer	1881	South part of the SW¼ SE¼, South part of the SE¼ SE¼, Section 34, and S½ SW¼, Section 35. [The section 34 land corresponds to the description given for 1852]	37 41/100 (plus land in Sect.35)	3522.30	Warranty Deed	40	17
Boone County Sheriff	Charles W. Gaston	1884	Same land in Section 34 described above	37 41/100	- - -	Sheriffs Deed	Transfer Book E	--
Peter Spencer	Edgar L. Green	1884	Same Land in Section 34 described above	37 41/100	- - -	Warrenty Deed	Transfer Book E	--
Charles Gaston	Lafayette Zimbelman	1885	Same land in section 34 described above	37 41/100	1800.00	Sheriffs Warranty Deed	56	316
Peter Spencer	Lafayette Zimbelman	1885	Same land in section 34 described above	37 41/100	500.00	Quit Claim Deed	57	240

* This includes Tracts #800 & 801

TABLE 4 (continued)
Tract #800, Section 34

Grantor	Grantee	Date	Description	Acreage	Price	Deed Type	Land Deed Book#	Page No.
Edgar Green	Lafayette Zimbelman	1885	Same land in Section 34 as previously described	37 41/100	- -	Quit Claim Deed	Transfer Book E	--
Zimbelman	Isaac Wheeler	1893	Same land in Section 34 as previously described, plus the S½ SW¼ of Section 35 with the "grantors to have the possession and occupance of said farms until March 1, 1894.	37 41/100 plus land in Sect. 35	2600.00	Warranty Deed	90	340
Zimbelman	Phillips Fuel Co.	1909	Same as above except for the reservation of the mineral rights and subject to the lease of J.W. Doran expiring on March 1911.	37 41/100 plus land in Sect. 35	25,000.00	Warranty Deed	Transfer Book J	74
Phillips Fuel Co.	W. F. Johnston	1915	*Lt. 2 of SE¼ SE¼, Lt. 2 of SW¼ SW¼,* Section 34, plus Dallas County Land & subject to $13,000.00 mortgage to Zimbelman and a lease to C.E. *Wilcoxson* until 1916.	- - - -	*$1.00* with reservation of mineral rights	*Warranty*	*170*	589
Johnston	Orma A. Hutton & Ankney W. Larson	1916	Same land as above except the mortgage is $11,000.00	- - - -	21,000.00	Warranty Deed	170	616
Larson et al	A. A. Whitmore	1917	Same as above	- - - -	29,000.00	Warranty Deed	182	96
A. A. Whitmore	U.S.A.	1968	Tract #800	- - - -	- -	Condemnation	Transfer Book P	76

eliminated because he held title to a great deal of land throughout the township and was likely a land speculator who lived elsewhere. There was an "S.B. McCall," who was the County Judge in the late 1850s and who supposedly established Cass Township (on the west side of the river), and an "S.B. McCall" who taught the first school in Cass Township. It is possible that these are one in the same person, although there was also a Soloman McCall, who lived in this same general area (Union Historical Co. 1880a:432; Madrid 1983:12).

Benjamin Williams settled on the claim next to Gastons (or rather what later was conveyed to Gaston from McCall, see Table 4), but he also laid out the town of Elk Rapids in the NE1/4 of Section 34. It seems more plausible that he would have lived near or in this town. However, Williams' earliest lodging could have been on the river near where Gaston lived and therefore at site 13BN148. It is also possible that 13BN148 may have been Gaston's original cabin. It is known that he moved nearer to Madrid in the 1880s, and the confusion apparent in the early land entries for this parcel of land leaves the possibility that this could be his original cabin site (Madrid 1983:389). The fact that Transfer Book A lists Gaston's claim as the SE1/4 SE1/4 and SW1/4 SE1/4 and further that when McCall conveyed land to Gaston in 1852 (Land Deed Book A, p.58) this included the south parts of both the SW1/4 SE1/4 and the SE1/4 SE1/4, then, this site would have been close to the edge of this parcel. However, it is more positively a part of Benjamin William's property. There is a photograph identified as "Charles Gaston's Log Cabin" on page 4 in the Madrid Centennial book (1983); however, the photograph is not identified as to date or location nor is it referenced as to source. It might be possible to find additional documentation of the photograph by contacting the individuals who were responsible for compiling this chapter (i.e., Earl Check and A. K. Johnson).

That site 13BN148 was not occupied in the late 19th-20th century is surmised from the fact that the farmsteads for both tracts number 800 and number 801 were located further to the east on higher terraces (Figure 19). The Boone County Plat Book for 1896 shows the property owned by Lafayette Zimbelman in Sections 34 and 35 (see Table 4), and that owned by the Dalander Estate in Section 34 and about 10 acres in Section 35 (see Table 3). The map of both parcels of land have house structures indicated which are off the river close to the section boundary line between 34 and 35. There are no structures indicated at the 13BN148 housesite location. The same is true of the 1902 Boone County Plat Book as well as the 1918 Plat Book. The former shows the structures in the same location as in 1896, but the latter shows them moved further east into Section 35.

When the Corps of Engineers acquired this property, Tract number 800 (Figure 19) was owned by Art Whitmore. He was residing in a frame house with a barn, four corn cribs and a silo as outbuildings. This farmstead was located near the eastern boundary line of Section 34. The acquisition file for this tract contained only a verbal description of this structure and no photographs. It was not estimated when this house was constructed. The COE acquisition file for Tract 801 (Figure 19) noted that it was owned by the estate of George P. Whitmore and that his family lived in a two-story frame house with a hen house, two cribs, and two sheds as outbuildings on a 2 acre tract farmstead. This was located to the east in this tract near Art Whitmore's farmstead. Tract number 807 (see Figure 19) was originally part of

the Dalander estate as was tract 801 at one time (see Table 3). At the time of acquisition there were no structures on Tract number 807.

Therefore, it seems likely that the possible housesite on 13BN148 dated from ca. 1846-1870s, and it was no longer standing by 1896 when the plat map of this township was done. The housesite cannot be positively identified as yet with either Benjamin Williams or Charles Gaston, even though the house was later clearly on William's property. Due to the original claims confusion, there was not time enough to explore other archival records such as mortgage and tax records, as well as the original surveyor's records from 1848. These may have helped to clarify ownership. It should be noted that the Original Land Survey Map (Figure 3) does not show a structure in Section 34. It was completed in 1848, but the field work probably was done earlier.

From this brief analysis it can be seen that most of the historic sites located in the Saylorville Reservoir area have the potential for providing a wealth of archival and archaeological information. A major priority in any further analysis of 13BN148 would be archaeological testing in order to determine if a house foundation is present, its size and configuration, and more specifically when it was constructed and how long it was actually occupied. More indepth archival research could hopefully determine its actual ownership.

Another potential application of archival research could follow the format of that conducted for the Cannon Reservoir (Mark Twain Lake) in Missouri. This study utilized land entry and deed records to plot maps in order to define settlement patterns through time. Environmental data was added to this to pinpoint the effect of this factor on settlement formation. It was noted that the early settlements were most often located on or near the timber-prairie boundary along streams (O'Brien et al 1982:306). To this information census and family history data (i.e., birth, death, and marriage records) were added which provided social variables to weigh against other variables such as the environment, logistics and mobility, in the determination of settlement patterns and community development (Ibid.). Other types of archival data included in this study were soil fertility rankings based upon General Land Office descriptions, crop productivity indexes based upon U.S. Soil Conservation Service figures, and tree densities based upon General Land Office original survey maps and descriptions (op.cit.:306-308). Much of this data is available for the central Des Moines River Valley as well.

Another aspect of the Cannon Reservoir historical research correlated archaeological and archival data to understand the organization of rural farmsteads and how this changed through time (O'Brien et al 1982:311-334). A similar study of the Saylorville Reservoir would be hampered by the lack of well-defined historic archaeological site configurations. In the ISU work sites were rarely defined beyond general surface scatter limits and occasionally by prominent features, such as the root cellar at 13BN12 and the house cellar and well depression at 13PK184. Unfortunately, very little subsurface testing was conducted on historic housesites (Gradwohl and Osborn 1975:90; Gradwohl 1975:64-94). However, the potential still remains for archaeological analysis of those sites above the normal reservoir pool level. The information contained within the C.O.E. acquisition files could also

provide farmstead configuration data where archaeological data does not exist and/or is not obtainable.

3) **Oral History**

This aspect of the historical record has not been approached or explored fully for the Saylorville project area and remains an untapped source of potentially important information. A few informal interviews with former landowners and residents of the area have been conducted to give an indication of the tremendous potential of this resource for archaeological, architectural, historical and socio-cultural information (see Gradwohl 1975; Army C.O.E. Final Report 1974:3). Nancy Osborn (ISU) is presently finishing a project in Ledges State Park, and oral history is part of this scope of work.

Other archaeological projects have utilized oral history in conjunction with archival and archaeological data with great success and have indicated the value of this resource. A study of historic sites on the Waverly Plantation in northeast Mississippi (Adams 1980:167-234) utilized oral history as a major source of historical information. Oral records were employed to counterbalance the scarcity of archival data on tenant farmer occupations, which left little evidence in the legal and historical records. Informants were able to draw maps of the farmsteads, describe architectural features, identify the function of structures, as well as identify some of the past occupants (Ibid.)

An intensive oral history program was conducted as one aspect of the Tombigbee Historic Townsites Project also in Mississippi (McClurken and Anderson 1981). This program produced eight volumes of interview transcripts from which information was integrated with archival and archaeological data. This project concerned three now-extinct 19th century townsites in northeast Mississippi. It was found that the oral data provided an abundance of valuable information which could not be found solely in the archival or archaeological record. Data pertaining to site locations, configurations, function, occupants, architecture, social traditions, etc. aided tremendously in the interpretation process. The major problem encountered in the Tombigbee project was how to "...focus and limit oral testimony to maximize the data still held in the memories of living informants" (Cleland and McBride 1983:6). Caution must always be used when analyzing oral historical data, as recollections can sometimes be faulty. This is a resource with tremendous potential for providing information which cannot be found elsewhere. When it is integrated with archival and archaeological data, oral records can fill in the gaps often found in the data base.

The large size of the Saylorville Reservoir area, as well as the relatively recent construction of the lake insure that a large number of potential informants are still available. The problem likely to be encountered will be the overwhelming amount of oral data to be gathered and processed. A logical way to deal with this problem would be to pinpoint areas of primary concern and focus on smaller spheres of research. For example, it might be determined that the greatest potential for this resource concerns the early 20th century coal mining camps of Boone, Dallas and Polk Counties. Perhaps attention could be focused on Scandia, Phildia and High Bridge. Another possible research area could be in the Coal Valley/Moingona area

concerning the pottery and mining industries that functioned during the late 19th century. Information concerning the now-extinct 19th century towns of the project area could be obtained from individuals who are descendents of the early settlers and/or former residents of the site areas. The latter could provide data concerning site and feature locations as well as descriptions of old buildings now destroyed. For example, Miss Esther Sundberg, a long-time resident of Madrid, wrote in 1979 in reference to Elk Rapids: "I can barely remember seeing the three store buildings standing in a row."

4) **Architectural Survey**

The major obstacle to studing this resource is the fact that the structures formerly in the Saylorville Reservoir area have all been destroyed or moved out of the project area. Unfortunately, no systematic survey was conducted of the buildings in their original locations. The only architectural research was conducted on the McCall House (13BN240), and this was reported in the form of a National Register of Historic Places Nomination compiled by David Gradwohl and Nancy Osborn (on file at the State Historic Preservation Office, Des Moines). This property was deemed ineligible and torn down. The only other structure about which there has been some historical research and photographs published is the Kate Shelly house (13BN238). This information can be found in Trail Tales, No. 38, 1981 (see also Gradwohl and Osborn 1976:108-109).

Fortunately, however, there is still a source for architectural research in the acquisition files compiled by the Army Corps of Engineers, Rock Island District. These files cover every tract of land purchased in the Saylorville project. Those tracts that had structures still standing on them have the following information in their acquisition file: a description of the property and structures, a brief history of its acquisition, maps of the spatial configuration of the structures, (occasionally) detailed drawings of the larger structures, and photographs of each building. The latter are in color or black and white and may not be of publishable quality, but they do provide a visual record of these structures and their surroundings.

To conduct an actual architectural survey of Saylorville Lake for the purpose of legal compliance is a moot point now, since all buildings are gone and the lake is operational. However, it is possible to conduct an archival study of architecture "after-the-fact" utilizing these files. It is also possible that an oral history program would reveal old family photographs of former residences and farmsteads. An analysis along the lines of those conducted in the Cannon and Truman Reservoir areas of Missouri could perhaps provide data with comparative applications (see O'Brien 1980; Linderer 1983).

5) **Archaeological Investigation**:

Numerous historic sites are permanently inundated by Saylorville Reservoir, and all historic buildings have been destroyed. Nevertheless, the historic archaeological record still exists in the ground and in the photographic and land records of the COE, and it remains largely undocumented and unmanaged. Surface reconnaissance by ISU identified hundreds of historic sites, most of which remain untested. An intensive program of archaeological

research and site testing conducted under the guidance of a well defined research strategy should be undertaken to provide information concerning historic settlement patterns, farmstead configurations, land development, transportation and marketing networks, and economic trends.

The archaeological field work should be conducted after a literature search has identified the locations of former residential sites, manufacturing locations or other historic manifestations (see previous pages). This information would be the universe from which samples could be selected for archaeological investigation. Archaeological investigation would be employed not only to confirm the historic records but also to supplement the written record with the details of lifestyles that are not ordinarily recorded (e.g. dietary patterns, seasons of site use, refuse disposal patterns, places of orgin of artifacts, composition of material culture). Known historic archaeological sites also should be compared with the written record to identify sites that were not recorded in land and other historic documents.

Conclusions

This study has provided an assessment of the existing and potential data and documentary resources pertaining to the historic period in the Saylorville Lake area. This information has not been analyzed. Rather, our purposes here have been to list the sources of information in one place and to employ two study areas (i.e., 13PK109, 13BN148) as illustrations of how the documentary data might be linked to archaeological remains. Most of the potential investigation of historical sites and related documents _has yet to be done_. Information from archaeological, archival, oral historical, and architectural records would contribute significantly to a reconstruction of the historical record of the central Des Moines River Valley and lead to an understanding of the development and lifeways of 19th and 20th century Iowa and the western frontier.

V
CURRENT SITE INFORMATION

This chapter contains four parts. First, the list of known cultural resource sites in the project area is discussed and survey biases are noted in the data. Then, the sites are evaluated for the types of impacts that have affected them. Thirdly, site distributions on landforms are analyzed for culture patterns and archaeological biases in the data base. Finally, the list of major issues raised in this volume is reviewed.

Sites List

The list of 521 known archaeological sites in or near the project area is reproduced in Appendix A of the Management Plan. The sites file is on micro-computer disk (**Apple IIe/c**) using the **PFS File/Report** software. Site location data for this file represents all sites found under terms of Saylorville project contracts and was taken from the state site records at the Office of the State Archaeologist, Iowa City. This information was cross-checked against the published site records and unpublished site maps of the Archaeological Laboratory, Iowa State University. A few of these site records are contradictory--sites mapped in different places, varying site boundaries, gross ranges in elevations, different permutations of site definition from successive investigations. Contradictions in the records were resolved by selecting a "best approximation" of the existing records, especially if a site is now destroyed, and by consulting with ISU personnel.

Other categories in the sites file were generated by the writer from ISU data and records. Estimates of site elevations were improved in some cases by referring to 2ft contour project maps. Site acreage comes from original site records, except in cases of sites investigated by CAR crews in 1984. The landform category was determined by E.A. Bettis and the writer with checks being made back to the original site records. Site use is a category with only prefatory definition. Specific uses defined by ISU (e.g. mounds, manufacturing, structure, etc.) are retained in the sites list, while unspecified prehistoric sites were divided into two groups: habitations=dense material scatters, unknown=small unspecified material scatters. Site condition means the current status of the site. Previous site impacts were taken from ISU records, and current site conditions were recorded by the writer during surveys in the reservoir. Site ages are newly determined by the writer and were accomplished by sorting through existing collections and by typing diagnostic artifacts (points, pottery). The category of "work/references" contains all published citations for each site. The category of "cultural information" includes various items: numbers of mounds, absolute dates, site identifications, etc. The last category, allocation, is the management use group to which the site has been assigned in the Management Plan.

The sites file was created with future modifications in mind. As all sites are rechecked by field visits in future years, the data in the sites

file can be modified. One category of information that must be added in the future is the hillslope evolution (Ruhe 1969) that affects site preservation. This item was proposed as part of the scope-of-work for this project, but its implementation on a site-by-site basis has proven to be too great a task. By hillslope evolution it is meant that the position of each site on the slope its landform should be recorded. The positions are summit/shoulder, backslope, footslope and toeslope. The effects of erosion and deposition are different for each position and are regular and predictable. Thus, hillslope evolution is a means of determining allocation strategies in the Management Plan.

The sites file is the condensed form of all we know about the cultural resource record in the Saylorville project. Regretably but unavoidably, there are methodologies that biased this knowledge. One of two major sources of bias came from the Saylorville project surveys. Government property had been fallowed by the time intensive surveys were done. Much of the surface survey was done in vegetated areas, but the shovel-test survey method was not utilized until late in the ISU projects. The other source of bias is on the analytical end of the investigations; much of the Saylorville collections have been sorted and catalogued but not intensively analyzed. Culturally diagnostic information remains to be culled through analysis of existing site assemblages before we can be certain that information from already analyzed sites is a representative sample of culture history.

It is difficult to spot patterns in the data that result from methodological biases. Perhaps the compilation of sites, landforms and site impacts in Table 5 assists the search for biases. At the bottom of Table 5 is a breakdown of all sites by landform. Note that the relative percentage of sites on each landform varies by <u>county</u>. These biases may be traced to the nature of the project boundary--it narrows and includes less upland landform upriver (i.e. Boone County). Thus, the proportion of upland sites in Boone County (18%) is 10% less than it is in Dallas (28%) and Polk (29%) Counties. At the other end of the project in the Downstream Corridor in Polk County, the area surveyed covered only the (then cultivated) floodplain terraces. The result is a twofold greater representation of sites on TI terraces in Polk County (10%) than in Boone County (4%). Regarding Fans and TH terraces, these landforms in Boone County were under cultivation at the time of the ISU survey, but the same landforms in Polk County were fallowed. The proportions of sites on Fans and TH terraces is twice as great in Boone (22%, 15%) as in Polk County (8%, 8%). Other biases stemming from surface survey in vegetated areas and abitrary project boundaries probably resulted in fewer sites being located in sidevalleys (no proportion greater than 9% for the three counties). The statistics for historic sites may also be skewed. The numbers at the lower left of Table 5 show Boone County with the largest sample of historic sites (59%), yet this county contains only 40% of all archaeological sites. It is likely that the sample of historic sites in Polk County is inadequate.

A combination of survey methods, project limitations and partial of analysis of all collections has skewed the representation of culturally identified site components. Again, at the bottom of Table 5 the total numbers of identified components can be compared with the site totals for each landform. The proportions of identified components in sidevalleys (3%) and on uplands (17%) is considerably lower than the proportions of all sites on those landforms (6%, 24% respectively). Sites in sidevalleys and uplands tend to

TABLE 5

Sites, Landforms
& Site Conditions

	Components n	Components %	Landforms: S n	S %	U n	U %	B n	B %	TW n	TW %	C n	C %	F n	F %	TH n	TH %	TI n	TI %	Excavated n	Excavated %	Damaged n	Damaged %	In Danger n	In Danger %	Out of danger n	Out of danger %	Outside boundary n	Outside boundary %
All Historic Sites	140*	--	5	4	25	18	26	19	12	9	1	1	26	19	29	21	15	11	43	31	103	74	44	40	42	39	31	22
Prehistoric components Oneota (all/sherds)	15/7	3/2	1/1	7/14	2/0	13/-	3/0	20/0	2/1	13/14	0	-	3/2	20/28	1/0	7/-	3/3	20/43	11	73	15	100	5	38	7	54	2	13
Great Oasis (all/sherds)	32/19	7/4	2/2	6/10	3/1	9/5	6/1	19/5	2/1	6/5	0	-	7/6	22/32	9/6	28/32	3/2	9/10	19	59	29	91	12	43	12	43	4	12
Late Late Woodland	62	14	1	2	9	14	12	19	6	10	0	-	16	26	14	23	4	6	32	52	50	81	27	53	11	22	11	18
(Unspecified) Woodland	47	11	4	8	9	19	16	34	1	2	3	6	6	13	3	6	4	8	14	30	33	72	17	50	16	47	13	28
early Late Woodland	47	11	0	-	6	13	11	23	3	6	0	-	17	36	8	17	2	4	24	52	40	83	22	52	15	38	6	12
Middle Woodland	93	21	0	-	14	15	21	23	9	10	1	1	22	24	22	23	3	3	38	40	77	83	37	53	24	32	17	18
Early Woodland	33	8	0	-	8	25	9	28	2	6	1	3	7	21	6	19	0	-	14	41	23	69	9	35	8	31	6	19
Late Archaic	70	18	5	7	15	21	18	26	4	6	1	1	14	20	10	14	3	4	31	44	55	79	2 1	30	18	26	12	17
(Unspecified) Archaic	16	4	2	12	3	19	3	19	2	12	0	-	3	19	2	12	1	6	4	25	12	75	2	14	7	50	2	12
Middle Archaic	20	4	0	-	4	20	7	35	3	15	0	-	3	15	3	15	0	-	10	50	17	85	10	59	0	-	3	15
Early Archaic	3	.7	0	-	1	33	1	33	0	-	0	-	1	33	0	-	0	-	2	67	2	67	1	50	0	-	1	33
Paleo Indian	4	.9	0	-	2	50	2	50	0	-	0	-	0	-	0	-	0	-	1	25	2	50	0	-	0	-	3	75
Totals	441		15	3	76	17	109	25	34	8	6	1	100	22	80	18	26	6	200	45	355	81	163 (exclude outside boundary)	45	118	33	80	18

Historic Sites n	Historic Sites %	all sites	Components n	Components %	S n	S %	U n	U %	B n	B %	TW n	TW %	C n	C %	F n	F %	TH n	TH %	TI n	TI %	Excavated n	Excavated %	Damaged n	Damaged %	In Danger n	In Danger %	Out of danger n	Out of danger %	Outside boundary n	Outside boundary %
53	38	Polk	263	50	13	5	77	29	99	38	4	2	2	.8	20	8	22	8	26	10										
5	4	Dallas	45	9	4	9	13	28	9	20	6	13	1	2	6	13	5	11	1	2										
82	59	Boone	213	41	14	6	39	18	43	20	24	11	4	2	48	22	32	15	9	4										
140		Totals	521		31	6	128	24	151	29	34	6	7	1	74	14	59	11	36	7	113	22	339	65	127	33	176	46	136	26

* 1 site on a TL terrace

yield few materials relative to sites in the main valley, therefore the opportunities to identify smaller components is lower. Skewing in the direction of higher proportions of identified site components also occurs. For instance, on Fans and TH terraces there are proportionally more components (22%, 18%) identified than there are total sites (14%, 11%) on these landforms. Sites on Fans and the TH landforms tend to have dense material scatters with many diagnostic tools.

These biases in the data could be corrected with additional surveys that focused on problem areas with intensive methodologies, e.g. shovel-test techniques, geomorphic mapping and probing. However, the all planning funds available for cultural resource work in Saylorville Lake have been spent to produce the present data base of 521 sites--not a miniscule sample! Only operational funding is available for future CRM studies. An alternative method for correcting some biases would be to search for new sites in poorly sampled areas in the same surveys that are conducted to determine on-going project impacts on known sites. Field assessements of site impacts are stipulated as part of the long-term project Management Plan for the operation of Saylorville Lake.

Project Impacts on Cultural Resources

Many sites in the project area were impacted by agricultural and construction effects prior to development of the lake. Construction and operation of the Saylorville Reservoir have added new kinds of impacts and relieved the effects of some others.

To sort out these impacts, six categories of effects in six degrees have been established for the analysis (see "condition" in the sites file, Appendix A in the Manangement Plan). The categories of effects are given letter designations (i,b,c,p,r,v).

Inundation (i) is the effect caused by high water in the lake or river due to COE management. Prior to building the Saylorville Dam, the Des Moines River did flood and cut new channels and destroy sites. Today, management of the reservoir causes water levels <u>above and below</u> the dam to remain at high levels for unnaturally long periods of time (see Benn and Harris 1983:58). This exacerbates the natural effects of bank erosion along the river channel. Of course the lake levels are artifical as well. Incremental raising and lowering of the reservoir level cuts small step-terraces (treads, risers) on the walls of the valley (Roper 1984:101) and redeposits sand and silt on the bottom of the lake. Sites along the strand lines ("bathtub ring") of the permanent reservoir are destroyed in a few seasons of reservoir level changes (see Emerson et al 1983). Upstream sites in the temporary flood pool tend not to erode as much because permanent stands of vegetation buffer the effects of pool level changes (see ASSESSMENT OF RESEARCH OBJECTIVES, volume III).

Bank erosion (b) occurs along the Des Moines River. When the river level is maintained at abnormally high levels, site erosion is most severe (see Benn 1984b). This effect occurs upstream from the Boone Bottoms and in the Downstream Corridor.

Construction (c) activities have damaged or destroyed many sites. Portions of the project area were heavily impacted by coal mining operations before and after the turn of the century. Mining disturbances have obliterated some small sidevalleys and higher river terraces (e.g. in Coal Valley in Boone County and around Scandia in Dallas County). Most of the modern activity occurred in the 1960s and 1970s when the reservoir was under construction. Many construction zones were not completely surveyed prior to development, and many known sites were not evaluated prior to being disturbed. Present day construction is minimal and planned in advance so that site impacts can be evaluated.

Plowing (p) is a category that encompasses other agricultural activities, like field leveling and tiling. Practically all of the project area, excepting narrow side valleys and sinuous ridge summits, has been plowed during the historic period. Sites on uplands, benches and higher terraces (e.g. TW) have suffered disturbance from agricultural activities. Broad expanses of bottom land in Boone County are leased by the COE and ICC for agricultural activities today. In these areas plowing is not deep or "fence-to-fence" and therefore does not promote serious soil erosion.

Recreational (r) effects are probably the least quantifiable group of impacts. Use of the project area for fishing, camping, hiking and off-road vehicles creates impacts in the form of well-worn paths, casual artifact collecting, vegetation kills (which leads to surface erosion) and gross landform destruction (due to motorcycle paths).

Vandalism (v) of sites is another unquantified effect. Sites already exposed by erosion are regularly visited by a small cadre of experienced collectors. These people are known to professional archaeologists largely by their footprints. The sites they visit tend to be thoroughly deflated and therefore destroyed for purposes of research. No amateur digging has been observed lately in the project area.

All of the project area sites have been evaluated for the six effects described above (some unvisited sites have been evaluated only in preliminary fashion). Based on these impacts and observations by the ISU crews in their published reports, all sites have been designated by degree of preservation (numbers 0-6 under "condition" in the sites file, Appendix A, Management Plan). Categories 0 (destroyed) and 5 (outside COE boundary) are mutually exclusive groups, but other categories can co-occur because their effects can be both past and anticipated.

Destroyed (0) sites are missing 80% or more of their original context. Artifacts may still be present, but the landform context of the site has been damaged beyond a reasonable expectation of providing research potential. Sites now lying beneath the permanent reservoir pool (833-838ft) are assumed to be intact unless otherwise indicated by ISU investigations.

Adversely Impacted (1) sites have been damaged in some way but retain 20% or more of their integrity. Aside from project and natural impacts, the sites that have been affected by archaeological excavation (i.e. shovel-test survey, testing, data recovery) are also included in this category. The issue of how to determine the proportion of a site that is destroyed or damaged is not entirely resolved. Proportional limits of site integrity used herein (i.e.

80%, 20%) are convenient numbers based on estimates based on of the vertical and horizontal parameters of a site. The vertical limits of a cultural deposit are not difficult to estimate if some excavation has been done. Based on the deflation of the solum and/or landform, one calculates the proportion of a site that has been destroyed. The horizontal limits of a surface site are, likewise, relatively easy to determine, but buried site parameters are much more vague. When extensive excavation data is not available for a site (true in most cases), the parameters of the landform containing the site are calculated to determine site integrity.

Sites that have a high probability of being damaged or destroyed in the near future (2) are grouped. These sites may be periodically inundated, eroded along river banks, threatened by vandalism (e.g. mounds) or inevitably damaged by motorcycle trails.

Sites where impacts may potentially damage (3) the cultural resource are placed in this category. Long-term impacts relating to inundation in the temporary flood pool and recreational uses may threaten sites in this group.

Sites on COE fee taking property that are not threatened (4) compose a management category. Sites fall in this category by default, when no adverse effects are anticipated or because they have not been visited recently and their status is uncertain.

Sites outside COE boundaries (5) are placed in an exclusive category. No management decisions are made for this group.

Tested or excavated sites (6) are grouped together because they have provided already some types of research data.

All of the effects of project impacts on known sites are depicted in Table 5. The columns on the right side of Table 5 show identified cultural components by landform (top) as well as all Saylorville sites by landform (bottom). Comparing numbers of components with the site totals, it is at first apparent that a higher proportion of identified components (45%) is excavated than the proportion of all sites (22%). This should be the case since excavation usually yields more diagnostic artifacts than mere surface collecting, and excavation of a single site may yield more than one identified component. Note in the "excavated" column that the percentages of excavated sites tend to be higher in the late prehistoric components, i.e. Late Woodland, Great Oasis and Oneota. There is a need to prioritize excavation on Archaic period sites. In this same column the proportion of excavated historic sites (31%) is much less than the overall average (45%) for other culture periods. The needs for historical research are covered below and in the Management Plan.

In the next two columns, "damaged" and "in danger" (i.e. condition categories 2,3), the proportions of identified components (81%, 45%) are much higher than proportions of all sites (65%, 33% respectively). This means that a majority of cultural resources for which we have diagnostic information are already damaged or will be disturbed in the year future. Notice that 100% of the Oneota components have been damaged. But, even the proportions of all sites that are damaged and in danger are very high--<u>33% of all sites are in danger of future damage or destruction</u>! The imperative for active site

preservation is clear. The last column depicts the numbers of sites that lie outside COE boundaries. The site total here is 26%, although only 18% of the identified components fall in this group. This large number of sites outside but near the COE boundary composes an important source of cultural information. These sites cannot be managed by the COE, but archaeological research should include these sites to obtain a complete picture of past lifeways in the Saylorville region.

In Table 6 the types and degrees of site impacts have been broken down by county. Prehistoric sites threatened with probable damage and destruction (2) are situated primarily on Benches and Fans in Polk County (n=34). The principal impacts on these sites come from bank erosion and inundation. Note that 78% of all prehistoric sites threatened with immanent damage/destruction have been investigated by some type of archaeological excavation. The sample of historic sites threatened by probable damage/destruction numbers 20 for Polk and Boone Counties. Bank and inundation effects are threatening the historic sites in group 2. Prehistoric sites threatened by potential future impacts (3) will be subjected to a greater variety of effects. Twenty-two sites on Uplands and Benches in Polk County might be affected several impacts, primarily inundation (on Benches), recreation and plowing (Uplands). Seventeen prehistoric sites on Benches, TW, Fans and TH in Dallas County might be affected by inundation, bank erosion and vandalism. The majority of these Dallas County sites are on landforms lying at low elevations within the flood pool; they are periodically inundated. Inundation kills vegetation, exacerbates erosion and exposes artifacts for collectors who regularly visit sites (i.e. around Scandia). In Boone County, sites on TW, Fans, TH and TI (n=40) might be affected primarily by plowing of leased government land and to a lesser extent by bank erosion, inundation and recreation. Of all 85 prehistoric sites that might be impacted, only about 26% have been excavated by any method. The 42 historic sites potentially threatened by future impacts (3) are distributed in the three counties. Historic sites in Polk and Dallas Counties may be affected by inundation, bank erosion and vandalism, while those in Boone County are especially affected by plowing and less so by erosion and recreational effects. Thirty-seven percent of all threatened historic sites have been investigated by some form of excavation.

The statistics in this section generally show that many sites have been investigated (22%) by archaeological methods other than surface survey. This figure reflects many years of intensive projects by ISU, Impact Services Inc., Luther College and Southwest Missouri State University. The figures also demonstrate the high rates of past site disturbances (65%) and probable future impacts (33%). It is concluded that the primary management need for cultural resources is allocating sites to categories of permanent preservation and conservation (for future research). More excavation should not become a priority for future site management (except where mitigation of impacts is required by statute) until existing sites collections are analyzed.

Site Distributions & Landforms

This is a relatively new section for archaeological reports. The purpose is to quantify site distributions on project area landforms. Eventually, this endeavor will not merely specify site densities within an areal distribution of landforms, rather site densities will be estimated within the volume of

TABLE 6
Site Impacts

	2 Probable destruction					3 Future impacts				
	Polk	Dallas	Boone	Subtotal n	Subtotal %	Polk	Dallas	Boone	Subtotal n	Subtotal %
All Historic Sites:	12 6b 6i 6ex	---	8 3b 2i 3ex 1c 1p 1r	20 9ex	9b 8i 1c 1p 1r 45%	6 3i 1v 1p 2ex 1r	10 3b 4i 3v 2ex	26 6b 3i 1v 12p 10ex 4r	42 14ex	9b 10i 5v 13p 5r 33%
Prehistoric Sites:										
Upland	- - -	---	- - -			9 2i 5r 3ex 3p	- - -	1v	10	12
Sidevalley	1 b i	---	- - -	1	2	- - -	1 i b	1 p	2	2
Bench	27 14b 27i 22ex 1c 2v	---	- - -	27	59	13 11i 1b 2v 1p 2r	2 b i v	1 i	16	19
Wisconsinan Terrace	- - -	---	- - -			- - -	6 6i 3b 6v	6 4b 2p 1ex 1i	12	14
Fan	7 7b 6i 6ex	---	1 b i ex	8	17	- - -	4 2b 2i 2v	21 2i 4r 7ex 14p 1v	25	29
High Terrace	3 3b 2i 2ex	---	2 i b r c 1ex	5	11	1 1b 1i ex	4 4i 3b 2ex 3v	10 1r 8p 5ex i b	15	18
Intermediate Terrace	2 1p 1c 1ex 1b	1i	2 2p b 2ex	5	11	2 1i 1b 1ex 1r	- - -	3 2b 1p	5	6
Prehistoric sub-totals	40 26b 36i 32 ex 2c 2v 1p	1i	5 3b i r 4ex c 2p	46 29b 37i r 3c 2v 3p 36ex	78% 78%	25 3b 15i 2v 8r 1p 5ex	17 10b 14i 12v 2ex	43 6b 5i 2v 26p 5r 15ex	85 19b 34i 16v 13r 27p 22ex	25.9% 25.9%

Key = ex = excavated
b = bank erosion
i = inundation
c = construciton
v = vandalism
p = plowing
r = recreation

each alluvial or colluvial landform. The approach will account for buried sites as well as sites expressed on the surface of landforms. The ultimate purpose of this methodology is to develop more reliable and culturally relevant models of prehistoric settlement patterns so that existing cultural recourses can be managed better.

The site distributions available right now are quantified by areal coverage of landforms within the Des Moines valley. This information is depicted in Table 7 (hectares calculated by E. A. Bettis). On the right side of the table are four landforms (S, U, B, TW) whose areal coverage is not calculated. Sidevalley (S) coverage will be available eventually. Uplands (U), Benches (B) and Wisconsinan terraces (TW) are not calculated; these landforms are not composed of accumulated sediments which could contain buried sites. The five landforms within the valley (C, F, TH, TI, TL) have coverage calculated on the left side of Table 7. These are depositional contexts where sites are buried.

At the top of Table 7 are hectares of coverage for landforms. The proportion of Colluvial slopes (.6%) is low--somewhat lower than anticipated. The Colluvial slope landform is narrow, merges with other landforms and is sinuously arranged. These factors make it a difficult landform to map and measure. Other landforms--Fans and three terraces--occur in proportions not unexpected for the valley.

The proportional distribution of identified components, shown at the bottom of Table 7, has some striking contrasts with the coverage of landforms. Most notable are the vast contrasts in the Fan and TL landforms. Fans compose about 4% of the valley floor but contain 42% of the cultural components. Conversely, Low terraces (TL) cover 30% of the floor but have only one site! It is common knowledge among archaeologists (and private collectors) that Fans are likely places to find cultural materials, and low terraces are very poor places to find material. One might conclude that the results in Table 7 are predetermined by collecting biases. However, this writer has spent considerable time on TL terraces in the Des Moines valley and has found the low incidence of sites to be a reality. The proportions of sites and coverage of other landforms, TH and TI terraces, are similar and represent the fact that sites are common on both types of terraces. The proportions of sites on TH (34%) and TI (20%) terraces probably are low considering the numbers of buried sites yet to be located in the massive sediments of the terraces.

Actually, the majority of identified components are situated on landforms for which coverage has not been estimated (i.e. right side of Table 7). Knowing the coverage of these landforms would assist in determining overall human settlement patterns for each culture period.

There are other notable relationships in the left side columns in Table 7. For example, of the few known Oneota components three are situated on TI terraces. These are smaller, temporary campsites unlike the large villages on higher terraces and uplands in the Red Rock and Raccoon River locality. Another noticable relationship is the absence of Early Woodland sites on TI terraces. This is thought to be a survey bias (see OVERVIEW OF PREHISTORIC CULTURES above). In terms of the overall distribution of identified components the dashed line that stair-steps across Table 7 delineates the landforms from which sites of particular ages are excluded. The line means

TABLE 7
Site Densities

		Landforms									
		C/F	F	TH	TI	TL	Sub-totals	S	U	B	TW
Area											
Fraser → Dam	ha.	21.5	133.9	1088.7	1228	1059.5	3531.6				
	%	0.6	3.8	30.8	34.8	30.0					
Archaeological Sites											
Historic sites	no	1	26	29	15	1	72	5	25	26	12
	%	1	36	40	21	1					
Components											
Oneota (sherds)	no	0	2	0	3	0	5	1	0	0	1
	%	-	40	-	60	-					
Great Oasis (sherds)	no	0	6	6	2	0	14	2	1	1	1
	%	-	43	43	14	-					
late Late Woodland	no	0	16	14	4	0	34	1	9	12	6
	-	-	47	41	12	-					
early Late Woodland	no	0	17	8	2	0	27	0	6	11	3
	%	-	63	30	7	-					
Middle Woodland	no	1	22	22	3	0	48	0	14	21	9
	%	2	46	46	6	0					
Early Woodland	no	1	7	6	0	0	14	0	8	9	2
	%	7	50	43	-	-					
Late Archaic	no	1	14	10	3	0	28	5	15	18	4
	%	4	50	36	11	-					
Middle Archaic	no	0	3	3	0	0	6	0	4	7	3
	%	-	50	50	-	-					
Early Archaic	no	0	1	0	0	0	1	0	1	1	0
	%	-	100	-	-	-					
Paleo-Indian	no	0	0	0	0	0	0	0	2	2	0
	%	-	-	-	-	-					
All Components	no	7	75	60	36	1	179	31	128	151	34
	%	4	42	34	20	0					

that for a particular culture period certain landforms had not yet been created and therefore were not available for occupation. Unfortunatly, Table 7 does not depict missing site distributions; i.e. sites and landforms that have been destroyed or completely covered by subsequent fluvial activity in the valley. This information, not yet available, would include eroded sections of the TH and TI terraces, missing alluvial Fans and massive portions of the Late Wisconsinan/early Holocene floodplain, which are deeply buried. Without the missing data, Table 7 is a poor approximation of cultural reality.

Summary of Research Problems & the Resource Protection & Planning Process

This section will review the goals of the Overview and summarize the needs of future research with special emphasis on the problems that have to be resolved. This will be a condensed version of discussions and analysis that have preceded this page.

****item**** In 1981 a program was started to increase the scope of archaeological investigations in the Saylorville project to include the consideration of landscape context for sites (Benn and Bettis 1981). The intent of the program was to include all Saylorville landforms and sites in an integrated model of geological process and site preservation with predictive capability (Benn and Harris 1983:120). The Downstream Corridor was the initial study area for application of this approach. Now, the whole of the Saylorville project is encompassed by this approach with the completion of the Impact Service's studies (Emerson et al 1983; Emerson and Finney 1984) and the drafting of this document. One procedure of geomorphological-archaeological method remains to be fulfilled. Data from the testing program must be obtained to calculate relative site densities in the volumes of each landform. This will make the landscape/site model truly predictive.

****item**** Five needs of the Overview/Management Plan project were discussed at the beginning of this document. These can be reevaluated now.

1) Apply Hillslope and Landscape models to the Site Data. The Landscape model from the Downstream Corridor is being applied to the entire Saylorville project. It appears in summary form in this document, and it is explain in detail in a forthcoming report by E. A. Bettis III and B. Hoyer of the Iowa Geological Survey. The Hillslope model (Ruhe 1969) must be applied to each site by means of resurvey to determine present site conditions and contexts.

2) Analyze Existing Site Assemblages. The writer pulled samples of diagnostic ceramics and hafted bifaces from ISU collections, and their typologies are incorporated in the text and appendices in this document. A thorough analysis of all site materials, particularly historic items, will require another project scope-of-work other than the present one.

3) Analyze the Cultural Sequence and Develop Interpretations about Cultural Processes. The middle sections of this document contain a review and revision of the cultural sequence. Where possible the writer has attempted to include inferences about culture process, but the cultural overview really defined more knowledge gaps than solutions.

4) Evaluate the Existing Data Base for Site Locations and Functions. The sites list (Appendix A, Management Plan) represents a revision of the data base, including new determinations of cultural age(s) and landscape position for each site. The sites list was used to generate a series of project maps (Figures 5-9, 12-14) from which settlement data were inferred. Analytical data does not exist for inferring site function(s), but it could be obtained through analysis of existing site collections.

5) Prioritize Research. Some broad statements concening priority research are made herein (e.g. limit future survey, digging projects; focus on current site preservation and investigation of historic components). Most of this issue is left for discussion in the Management Plan.

item Several research questions were identified in the text of the cultural sequence, prehistoric and historic. Specific questions like these open broad avenues for future research, providing directions for development of a cultural resource management plan for Saylorville Lake. The research questions are itemized below with a following comment on their significance.

a) Paleo-Indians do not seem to have frequented the central Des Moines valley. Are remains of their sites on buried TW terraces beneath fans, TH and TI terraces?

This question is related to two broad issues. First, evidence for Paleo-Indians (and Early Man) in North America generates considerable interest within the community of professional archaeologists and among the public. All interested people want to know when and how humans initially populated the New World. Secondly, locating deeply buried remains of early human beings presents substantial methodological problems for archaeologists (e.g. these remains lie below the water table and much dirt must be moved to reach the deposits). This is a clear case where archaeological methods determine what evidence will be discovered.

b) Are there significant differences between of tool inventories, and therefore subsistence patterns, of Early and Middle Archaic (I) cultural assemblages? (see Benn and Harris 1983:question 4) How did central Des Moines valley cultures of these periods compare (relate) to contemporary cultures of the western bison hunters and eastern foragers? Middle Archaic sites seem to be small, diffuse scatters buried in massive terraces (TH). Are many of these sites missing because of river erosion in its meanderbelt?

Issues relating to Archaic cultures are currently popular among archaeologists. The Archaic periods were the time when basic Indian adaptations to the American environments were established. Archaic economic, social and ideational systems formed the basis for later developments during the Woodland and Mississippi periods. By locating and studying Archaic sites, we will gain important insights into the major trends of prehistory.

c) For the Late Archaic period are there other types of diagnostic chipped stone tools besides the hafted bifaces? Do changes in tool types and the appearance of denser site patterns indicate major culture changes occurred between the Middle (III) and Late Archaic periods? Do numerous fire-cracked rock features of this and later Woodland periods represent part of new subsistence strategies?

Recent evidence for the Archaic periods (e.g. Brown and Vierra 1983) shows that significant culture changes took place from the Middle to Late Archaic periods. Before these changes can be analyzed, archaeologists must have empirical evidence for Archaic societies in the form of tool typologies and types of subsistence.

d) Early Woodland period sites are not yet located on TI landforms, the low terrace position where they are common in the Illinois River valley. We need to know if this is a survey bias or a true culture pattern. A concentration of Early Woodland sites in Polk County may have been in part contemporary with the Middle Woodland, Van Hyning phase upriver.

The dynamic changes of the Early Woodland period (e.g. pottery development, population reorganization) are interesting for what they show us about the organization and priorities of prehistoric societies. For instance, the cross-cultural approach can be employed to compare the nature of technical change during the Early Woodland period with later periods and the modern age.

e) The Middle Woodland period is most visibly manifested by large, pottery-bearing sites in and around the Boone Bottoms. Was this the primary settlement pattern, or were outlying temporary use sites part of this pattern as well? (see Benn and Harris 1983:28, question 9) Does (did) the Boone Mound contain a sub-floor post mold pattern indicative of a charnal house?

The mound building cultures of the Middle Woodland period have always been at the center of public interest about prehistoric peoples. Public displays are built around the artifacts and dioramic views of this period. The central Des Moines valley contained one of the centers of the mound building manifestation, thus the project area is one of the major study areas for this type of development.

f) If the settlement patterns of the Middle and early Late Woodland periods were nearly the same, what was the nature of changes in the social system which lead to the building of small mounds on blufftops during the latter period? Was maize horticulture introduced during this period of change? (see Osborn and Gradwohl 1982:vol. II, pg. 147, question 5; Benn and Harris 1983:28, question 10).

g) How can the Woodland ceramic typologies and phase designations be clarified for the late Late Woodland period? (see Osborn and Gradwohl 1982:vol. II, pg. 146, questions 2,3; Benn and Harris 1983:28, question 8).

Questions f and g cover a period of culture change which included the evolution of society from kinship-based production to the organization of politically powerful tribes. This type of social change is one aspect of broad anthropological theories about the development of human society. Examples of social change like this must be studied wherever they are available.

h) Great Oasis and Oneota cultures probably did not co-occupy the same territories (Benn 1984b). What was the nature and size of their spheres of influence, and what were the patterns of their permament villages and seasonal sites? (see Osborn and Gradwohl 1982: vol II, pg. 146, question 1; Benn and Harris 1983:28, question 6).

By knowing how these societies spaced themselves across the landscape, we will gain knowledge about how each culture was organized and reproduced. Also, knowing prehistoric settlement patterns makes it possible to predict overall site distributions and therefore to better manage the cultural resources of Iowa.

i) Manifestations of the Historic period (RP3 study units) are known primarily from written records and accounts. Except for pottery kilns, the data base for historic archaeology is very slim and not adequate to compare with the records. The historic archaeological data is not even complete enough to judge whether there are survey biases ingrained in the current site records: e.g. higher proportion of sites in Boone than in Polk County.

The history of the central Des Moines River valley is <u>the</u> history of the present population of central Iowa, indeed the entire state. Written histories contain some of the biases of the authors, and written records leave out many details of past lifeways. Archaeological data can significantly supplement the archival records, thus filling out the record of the past.

item The State Plan for cultural resources, the Resource Protection and Planning Process (RP3; E. Henning 1982), is a generalized document that must be updated by inputs of findings from projects like the Saylorville studies. At the same time the information from the Saylorville project must be organized and analyzed so that it is compatible with the framework of RP3. The findings from the Saylorville Overview are compared with the RP3 framework in the following paragraphs.

<u>Pre-Clovis Study Unit</u>. Northern portions of the Des Moines lobe should be eliminated because this area was covered by glacial ice during this period. The central Des Moines River valley may not have been habitatable because of massive floods of outwash waters.

<u>Paleo-Indian Study Unit</u>. This study unit is relevant to the central Des Moines valley at least as far north as Fraser (location of the Altamont morraine). The earliest human remains in this region probably date to the beginning of the period, ca. 12,000 B.P., according to the evidence of a fluted point fragment from the study area.

<u>Early-Middle Archaic Study Unit</u>. Consideration should be given to dividing this study unit into Early and Middle Archaic units. The evidence of one Dalton point in the study area is the first indication that an Early Archaic assemblage exists. Future evidence may also show that the Early and/or Middle Archaic study units should be further subdivided into Eastern and Western subunits. The division would reflect a real cultural dichotomy between subsistence patterns focusing on bison in the west and oriented toward woodland resources in the east.

<u>Late Archaic Study Unit</u>. This culture period may date as early as 4500 B.P. in the central Des Moines valley. The presence of Nebo Hill/Sedalia/Wadlow point types in the project area place it within the Eastern Archaic subunit, which is ultimately related to the Titterington phase in Illinois.

<u>Mississippi Basin Woodland Study Unit</u>. The central Des Moines valley does not belong in the North Central Woodland Study Unit (see Emerson and Finney

1984:119). The North Central unit is typified by environmental constraints on cultural development. There is no evidence of contraint in the Early Woodland period, Middle Woodland mound construction in the Boone Bottoms or in the early Late Woodland communities in the central Des Moines valley. Relations with the Southern Iowa Woodland Study Unit are not clear, yet. Woodland cultures in the study area are thought to have disappeared by circa 950-850 B.P. when Great Oasis and Oneota cultures dominated the area.

Great Oasis Study Unit. This unit exists as E. Henning originally conceived it. Great Oasis and Oneota cultures probably did not overlap in time or territory in the central Des Moines valley.

Burlington-Moingona Study Unit. No substantial changes are anticipated in this unit, except that the borders of the unit should be less definite to reflect the fluidity of Oneota territorial control.

Early Contact and Frontier Safety Study Units. Archaeological evidence pertaining to these time periods has proved to be difficult to locate, viz. Ft. Des Moines at the Raccoon/Des Moines Rivers confluence (see Henning et al 1982). No archaeological evidence exists in the project area.

Early Settlement Study Unit. Records of early settlement in the project area begin about 1845. None of the earliest sites have been archaeologicaly investigated, nor has there been a systematic program to link historic records of settlements with actual archaeological survey and testing.

Settlement Boom Study Unit.
Nation Divided Study Unit.
Urban and Industrial Development Study Unit. These study units are not yet delineated in the project area because a firm historic chronology has not been developed from artifact assemblages. The artifacts are available in existing collections. Historic records (e.g. land records, histories, etc.) are identified (Appendix F) and available for compilation with archaeological data to reconstruct culture patterns pertaining to historic study units.

Mineral Development Study Unit. This unit, which probably extends into the second dacade of the twenthieth century, is documented in the study area by ISU Master's Theses and a variety of historical records (see Chapter V.

Economic Change Study Unit.
War and Aftermath Study Unit.
Depression Study Unit.
Post-1940 Study Unit. Like other historic study units, these four occurred in the study area but are not satisfactorily delineated by diagnostic artifacts. The first unit, Economic Change (ca. 1890-1914), was a critical time in the project area because of the rapid growth of small towns serving the mineral industry and agriculture. The succeeding study units have not been archaeologically documented, and the implications of socio-economic change on the national scene have not been related to local populations in the project area. For last unit, Post-1940, all federal, state and local agencies and people are still living the effects of contemporary changes in the project area.

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APPENDIX A

Hafted Biface Typology
Saylorville Lake Area

Hafted Biface Typology
Saylorville Lake Area
Iowa

Type

L.1	lg *	wd	th	ba wd	sites
n=8	x̄=72.7	20.8	11.1	16.8	BN129,32,162
range=	62.7-101	10.1-24.5	10.2-12.5	14-19.8	PK165,153,163,109

-Ovate blade; slightly constricted stem; variable base shapes; thick biconvex to bitriangular cross-section; collateral lamellar and expanding soft hammer flaking meeting at central ridge; no grinding.
-1 each Winterset, Burlington and Maynes Creek chert.
-Sedalia (wider) and Nebo Hill (narrower) types (Chapman 1975; Cook 1976; Morrow 1984)
- Late Archaic period
-Figure A.1

L.1a					
n=5	x̄=40.6	20.9	8.6	14.5	PK150,235
range=	40.2-41	19.2-23.7	7.8-9.6	7.5-17.3	BN160,229

-Same morphology as L1 but shorter due to resharpening.
-1 Winterset chert.
-Variable Sedalia and Nebo Hill types
-Late Archaic period
-Figure A.1

L.2 &2a					
n=12	x̄=65.4	30.7	9.7	14.7	BN146,110,27,203
range=	45.1-84.4	23.9-42.3	8.2-12.5	10.7-19.4	43,103,14,38,187

-Broad excurvate blade and sharp tip; slightly constricted stem; rounded to sub-convex base; biplano to biconvex cross-section; broad flat expanding and lamellar soft hammer flaking with tertiary retouch; several specimens made from primary flakes; no grinding; L.2a with crude side notches at the shoulder.
-3 Winterset, 4 Warsaw (blue) chert.
-Karnack type (Cook 1976; Morrow 1984)
-Late Archaic period
-Figure A.1

*all measurements in millimeters; lg=length, wd=width, th=thickness, ba=basal, dpth=depth

Type	lg	wd	th	ba wd	sites
L.3 &3a					
n=5	$\bar{x}$=52	26.1	10.0	12.6	BN160,229,32,129
range=	47.2-59	22.2-27.7	8.9-11.5	10.3-16.3	PK233
					DA144

-Same morphology as L.2 but shorter and cruder; L.3a with side notches at the shoulder.
-2 Winterset, 1 Maynes Creek chert.
-No type name
-Possibly L. Archaic to E. Woodland periods
-Figure A.2

L.4					
n=5	$\bar{x}$=42.6	18.4	8.7	11.6	BN37
range=	33.1-50.2	16-20.1	7.3-10	8.5-13.3	PK111,216,155

-Excurvate blade and sharp tip; slightly contracting stem; round to sub-convex base; thick biconvex cross-section; fine lamellar pressure flaking with tertiary retouch; no grinding.
-2 Maynes Creek chert
-No type name
-Possibly Late Archaic to E. Woodland
-Figure A.2

Other Lanceolate/Ovate Forms

Dalton: 13BN244; resharpened triangular blade; deeply concave base (with flaw); lateral and basal grinding; Winterset chert; late Paleo-Indian (9500-8700 BP); (Chapman 1975); Figure A.2
Meserve: 13BN234; parallel-ovate blade, slightly constricted haft; sub-concave base; basal and lateral grinding; collateral pressure flaking;tan chert; late Paleo-Indian; Figure A.2
Lanceolate bases: 13PK251; contracting hafts; collateral pressure flaking; lateral and basal grinding; till cherts; late Paleo-Indian.
Fluted point failure: 13BN233; hinged flute over collateral flaking on point fragment; Winterset chert; early Paleo-Indian: Figure A.2.
Preforms: 4 secondary bifaces lacking notching.

-13PK219: large well made sub-triangular form with flat expanding flakes and edge beveling; fine light gray chert; Figure A.2
-13BN230: "turkey-tail"-like point of blotchy gray chert; unfinished base; Figure A.2
-Various ovate and triangular preforms lacking notches; Figure A.2

Type

St.1	lg	wd	th	ba wd	haft lg	sites
n=20	$\bar{x}$=38.4	23.2	8.1	17.4	13.8	BN40,140,27,203,32,37
range=	23-63.7	17.4-28	5.3-10.3	8.9-26.6	7.6-24.5	PK122,154,165,111

-Ovate blade; pointed shoulder; biconvex cross-section; expanding stem straight to sub-convex base; basal grinding; combined expanding and lamellar soft hammer flaking converging at center of blade; tertiary pressure flaking and resharpening on many blade edges.
-3 Maynes Creek chert and 1 Tongue River silicified sediment.
-Table Rock Stemmed type (Chapman 1975; Marshall 1958).
-Middle Archaic III to Late Archaic
-Figure A.3

St.2

n=3	$\bar{x}$= -	28	6.5	17.6	13.4	BN140
range=	-	24-31.5	6.2-6.9	13.8-19.7	11-15	PK277,158

-probably parallel ovate blade; biplano cross-section; small shoulder barbs; expanding stem; straight base (1 of 3 ground); flat collateral lamellar pressure flaking with tertiary edge retouch.
-Steuben-like type (White 1968; Morrow 1984)
-Probably early Late Woodland period
-Figure A.3

St.3

n=4	$\bar{x}$=39.0	18	6.3	13.4	9.9	BN206,140
range=	33.8-44	16.6-20.6	5-7.4	10-16.6	8-11.1	

-Ovate blade; rounded shoulder; biconvex cross-section; expanding stem; straight base with grinding; collateral pressure flaking and tertiary edge retouch.
-1 Maynes Creek chert
-Apple Blossom Stemmed type (Cook 1976).
-Late Archaic
-Figure A.3

Type St. 4	lg	wd	th	ba wd	haft lg	Sites
n=2	#1=82.7	40	12.2	26.1	16	BN37,38
	#2=39.2	22.6	9.6	14	11.7	

-triangular to subtriangular blade; sharp shoulder; biconvex cross-section; rough expanding stem; straight base; no grinding; crude deep heavy hammer flaking with occasional tertiary retouch.
-Tipton type (Morrow 1984)
-Late Archaic period
-Figure A.4

St. 5

n=11	$\bar{x}$=60.6	27.0	9.7	16.1	18.0	BN40,182
range=	45.2-87.3	21.1-32.2	8.5-12.1	13.2-18.6	13-24	PK226,265,175, 251,115,221

-ovate blade; pointed shoulder; thick biconvex cross-section; generally straight squared stem; generally straight base sometimes faceted; lateral stem grinding; soft and hard hammer expanding flakes meet near center of blade; irregular tertiary retouch.
-Warsaw (blue), 1 Warsaw tabular, 1 Winterset and 1 Burlington chert
-Kramer type (also similar to Robbins) (Munson & Harn 1971; Morrow 1984)
-Early Woodland period
-Figure A.4

St. 6

n=11	$\bar{x}$=46.4	23.3	9.3	14.3	12.2	BN14,140,37,105
range=	37.2-70.4	20-35.4	7.5-11	11.5-18.3	7.1-17.7	PK158,122,150, 175,197

-ovate blade; abrupt shoulder; biconvex cross-section with thickening at center; short irregular squared stem with rounded corners; straight to irregular base with no grinding; mostly hard and soft hammer expanding flakes with irregular tertiary retouch.
-1 Winterset chert, 1 Tongue River silicified sediment
-Poag type (Munson & Harn 1971)
-Late Archaic (to Early Woodland?) period
-Figure A.4

Type St. 7	lg	wd	th	ba wd	haft lg	Sites
n=4	$\bar{x}$=61.6	27.5	8	16	17.8	BN216,103
range=	52-73.5	23.2-31.8	7-9.1	13.8-21	14.3-21.7	PK149

-ovate blade; round shoulders; biplano to biconvex cross-section; long contracting stem (1 of 3 with grinding); broad flat soft hammer expanding flakes meeting at center of blade; continuous tertiary retouch
-Adena type (White 1968; Morrow 1984)
-early Middle Woodland period
-Figure A.5

St. 8

n=5	$\bar{x}$=42.3	24.4	6.9	14.1	10.6	BN103,140,38
range=	37.3-46.2	21-29	5.3-8	12.4-19	8.1-13.5	PK151

-sub-triangular blade; abrupt shoulder; biconvex cross-section; short wide squared stem with 1/5 ground; straight base; mostly soft hammer lamellar flaking meeting at center of blade; continuous tertiary retouch.
-2 Winterset chert
-Stone Square Stem (or possible Kramer variant) (Marshall 1958; Chapman 1975)
-possibly Late Archaic
-Figure A.5

St. 9

n=13	$\bar{x}$=45.7	25.9	8.2	9.7	12.7	BN14,37,103
range=	38.6-53.4	20-31.9	7-10.1	5.3-12.7	8.5-15	DA6 PK251,158,116,109, 175,203,111

-ovate to sub-triangular blades; pointed shoulders; biconvex cross-section; contracting stem; convex base with no grinding; flat expanding and lamellar soft hammer flaking often crossing center of blade; continuous tertiary retouch (relative crudeness and degree of resharpening vary).
-1 Maynes Creek chert and 2 Knife River chalcedony
-Dickson Contracting Stem type (White 1968)
-Early to Middle Woodland
-Figure A.5

Type

St. 10	lg	wd	th	ba wd	ba lg	Sites
n=2	#1 -	35.3	9.9	16	18.3	PK114,103
range=	#2 -	28.6	6.9	16	11.6	

-(triangular) blade; abrupt shoulders; biplano cross-section; very wide contracting stem; straight rough base with no grinding; soft hammer flat expanding flakes with much tertiary resharpening.
-No type name
-probably Late Archaic or Woodland periods
-Figure A.6

St. 11						
n=3	$\bar{x}$=25.8	17.8	5.8	8.3	7.6	BN140,203
range=	25.6-26	17.5-18.3	53-6.7	6.6-9.9	7-8.4	PK154

-short sub-triangular blade; pointed shoulder; biconvex cross-section; rough slightly squared short contracting stem with no grinding; flat even pressure flaking and continuous tertiary retouch.
-1 Winterset chert
-cf. Lost Island or small Poag type (Munson & Harn 1971; Morrow 1984)
-probably Middle to early Late Woodland
-Figure A.6

Other Stemmed Types

Large Stemmed Biface: 13BN115; parallel sided blade; round shoulder; straight sided contracting stem; made from unusual pink chert with red spots; flat expanding flaking and tertiary retouch; Figure A.6.

"Afton": 13BN233; formed on a flake by tertiary retouch on one face; expanding stem and contracting ovate blade; made from Warsaw (blue) chert; (Chapman 1975); Figure A.6.

"Manker": 13DA5; formed from variable soft hammer and pressure flaking and tertiary retouch; broad side notches and sub-triangular blade; made from Knife River chalcedony; (White 1968); Figure A.6.

Bifurcate Stem: 13BN216; ovate blade with bifurcated short straight stem; flat lamellar flakes give a thin artifact; made from Knife River chalcedony; Figure A.6.

Lost Island: 13PK150; small contracting stem version of the Dickson type; probably early Late Woodland period; (Morrow 1984); Figure A.6.

Type

SN.1	lg	wd	th	stem wd	ba lg	notch dpth	Sites
n= 1	84.3	40.1	9.3	31.4	15.7	6.9	PK113

-broad ovate blade; biconvex cross-section; deep slightly diagonal notches set close to the base; slightly sub-convex base (no grinding); basal corners rounded; flat broad soft hammer lamellar flaking and continuous tertiary retouch giving smooth even edges; single deep notch flakes.
-Warsaw (blue) chert
-similar to St. Charles and Thebes types (Luchterhand 1970; Chapman 1975)
-Middle Archaic I period
-Figure A.7

SN.2

n=4	x̄=71.8	27.3	8.6	14.1	14.8	3.8	BN110, 133, 203 PK111
range=	70-73.1	23-32.3	8.3-9.3	16.5-21.6	11.9-18.3	3.3-4.3	

-slightly excurvate blade; biconvex cross-section; round moderately deep notches set close to the base; irregular sub-convex base with rounded corners (no grinding); variable soft hammer expanding and lamellar flaking meeting at center of blade; continuous tertiary retouch; multiple flakes form notches.
-1 Winterset and 2 Maynes Creek chert
-Atalissa type (also similar to the Etley type) (Morrow 1984)
-Late Archaic period
-Figure A.7

SN.3

n=10	x̄=40.69	25.6	8.6	19.4	13.2	3.4	BN216,103 38,203, 27,114, 140,32 PK149
range=	31.9-46	21.5-35.1	7.9-10.1	16.5-23.4	10.1-15.9	2.6-4.1	

-broad sub-triangular blade; thick biconvex cross-section; very broad deep notches covering lower third of point; uneven convex base (no grinding); soft hammer lamellar flaking meeting at center of blade; stems irregularly flaked; blades often resharpened; discontinuous tertiary flaking; several flakes and crushing create broad notches.
-No type name
-Middle Archaic III to Late Archaic periods
-Figure A.7

Type SN.4	lg	wd	th	stem wd	ba lg	notch dpth	Sites
n=13	$\bar{x}$=44.5	20.4	8.5	20.6	14.0	2.1	BN121,27, 103,187 DA5 PK149,235, 365,114
range=	26.1-57.2	17.5-24.6	7-11.1	15.1-24.6	10.5-17.3	1.5-3	

-narrow ovate to sub-triangular blade; thick binconvex cross-section; very broad shallow notches on lower third of point; uneven straight to convex base (no grinding); mostly lamellar soft hammer flaking meeting at central ridge; little tertiary retouch but much resharpening; continuous steep flakes create broad notches.
-2 Winterset and 1 Maynes Creek chert and 1 Tongue River silicified sediment.
-Similar to SN.3 (above) and straight and flared stem Matanzas (Cook 1976)
-possibly Middle Archaic II and III and definitely Late Archaic periods
-Figure A.7

SN.5

n=4	$\bar{x}$=46.6	27.3	7.2	24.3	12.0	3.9	PK221,175, 165,107
range=	43.9-50.3	25.6-30.3	6.6-8.3	20.3-26.9	11.4-12.8	3.7-4.3	

-broad ovate blade; thin biconvex cross-section; wide deep notches set close to base; sub-convex base (no grinding); flat lamellar pressure and soft hammer flaking and continuous tertiary retouch; single flake notches.
-1 Winterset chert
-variety of Godar type (Cook 1976)
-Middle Archaic II-III periods
-Figure A.8

SN.6

n=5	$\bar{x}$=33.7	18.1	7.5	15.8	9.2	2.0	BN172 PK265,29, 111 DA6
range=	30.7-37	14.3-19.5	6.5-9	12.7-18.5	6-12.5	.8-2.6	

-medium to narrow ovate blades; thick biconvex cross-section; small round notches set close to base; bases uneven and somewhat rounded at corners (no grinding); fine soft hammer lamellar flaking meeting at center of blade; steep tertiary retouch; frequent resharpening on blades; single steep shallow flake forms notches.
-Matanzas type (Cook 1976)
-Middle Archaic II and III periods
-Figure A.8

Type							
SN.7	lg	wd	th	stem wd	ba lg	notch dpth	Sites
n=3	$\bar{x}$=30.1	20	6.7	19.2	8.5	1.8	BN172
range=	26.3-35.1	15.5-28.9	6.3-6.9	14.3-27.8	7.2-9.5	1.6-2.1	PK111,151

-ovate blade; smooth biconvex cross-section; small round notches; sub-convex base (no grinding); very fine lamellar pressure flaking with fine tertiary retouch; single small flake forms the notch.
-no type name, possibly a variety of the Little Sioux type (Morrow 1984)
-possibly Early Archaic II
-Figure A.8

SN.8							
n=7	$\bar{x}$=46.8	21.0	7.8	21.2	11.7	2.0	BN148
range=	40.6-61.2	18.2-24.5	6.3-9.4	18.4-26.3	10.2-14.1	1.1-2.6	DA6
							PK153,154, 107

-somewhat narrow ovate blade; some resharpening; even biconvex cross-section; round medium sized notches; thinned evenly finished straight to sub-concave base with squared ears; basal grinding on one-half of the examples; collateral lamellar soft hammer flaking meeting at central axis; some beveling and continuous tertiary retouch; single steep flake and crushing form notches.
-1 Maynes Creek chert
-Raddatz type (Wittry 1959)
-probably Middle Archaic I and II
-Figure A.8

SN.9							
n=3	$\bar{x}$=47.4	24.9	8.5	25.3	12.7	4.3	BN132,260
range=	43.9-50.8	20.1-30.5	7.4-9.2	24.1-26.4	11.9-13.9	3.3-5.2	PK29

-broad blades with resharpening; biconvex cross-section; deep round notches set low on the point; sub-convex base with thinning flakes and squared corners (no grinding); soft hammer variable lamellar and expanding flakes with continuous tertiary retouch on edges; 1-2 deep notch flakes.
-variety of the Godar type (Cook 1976)
-Middle Archaic II and III
-Figure A.8

SN.10							
n=4	$\bar{x}$=29.3	21.6	5.8	22.2	8.4	2.6	BN140
range=	22.7-32.7	19.3-23.9	5.2-6.6	21-23.9	7.2-9.2	2.1-3	PK122,197

-broad short sub-triangular blade; thin biconvex cross-section; small round notches set close to base; base sub-concave and as wide or wider than shoulder; 1 of 3 bases ground; fine flat lamellar pressure flaking meeting at center of blade; fine continuous tertiary flaking and basal thinning; single shallow flake forms notch.
-1 Winterset chert
-Little Sioux type (Morrow 1984)
-Middle Archaic (I?) and/or early Late Woodland
-Figure A.8

Type							
SN.11	lg	wd	th	ba wd	ba lg	notch dpth	Sites
n=7	$\bar{x}$=28.4	22.0	6.4	17.4	9.0	3.4	BN32
range=	24.3-35.5	16.9-28.7	5.4-7.3	14.9-20.3	7.2-11.5	2.8-4.5	PK158,150 175,165

-ovate blade, sometimes resharpened; biconvex; deep round notches set close to base; sub-concave to concave thinned base (one ground) with squared corners; basal width less than shoulder width; fine flat lamellar pressure flaking with continuous tertiary retouch; overlapping deep steep notch flakes
-one each Maynes Creek, Burlington and Winterset cherts
-Tama type (Morrow 1984)
-most specimens Middle to early Late Woodland (a few may be Middle Archaic I, II?)
-Figure A.9

SN.12

large	n=3	$\bar{x}$=41.9	21.5	6.1	19.1	10.9	2.3	PK114,251, 172
	range=	39.5-45.7	19.5-25	5-7.4	16.5-21.3	9.6-12.6	2-2.5	
small	n=6	$\bar{x}$=33.6	17.1	5.6	15.0	8.6	2.3	BN127,160, 172 PK149,175, 111
	range=	31.3-36	14.5-22	4.2-7.3	12.5-20	7-12.8	1.7-3	

-ovate blade; fairly thin biconvex cross-section; small round sometimes shallow notches set low on the point; convex thinned base (1 ground) with pointed corners; fine flat lamellar pressure flaking with continuous tertiary retouch; single shallow flake forms notch; most specimens made on primary flakes.
-Besant type (Morrow 1984)
-Late Woodland
-Figure A.9

SN.13

n=4	$\bar{x}$=33.5	22.1	6.6	20.2	9.2	3.4	BN103
range=	28-39	18.3-26.7	5.3-7.7	17.5-22.5	8.4-10.5	2.9-3.7	PK165,158 235

-sub-triangular blades; thin biconvex cross-section; medium round notches set at the widest point; straight slightly uneven bases without grinding and with squared corners; fine lamellar pressure flaking with continuous tertiary retouch; bases less well finished; made on flakes; single flake forms notch.
-Winterset and 1 Shaley gray chert
-possible variety of the Tama type or knife form of the Reed type (Morrow 1984)
-Late Woodland
-Figure A.9

Type SN.14	lg	wd	th	ba wd	ba lg	notch dpth	Sites
n=7	$\bar{x}$=18.7	12.4	3.7	13.0	5.9	1.6	BN103,110
range=	15-22.1	9.9-15	2.5-4.5	10.4-16	5-7.3	1-2	PK251

-small, wide triangular blade; thin biplano to biconvex cross-section; very small notches set high above base; base unevenly straight (no grinding); fine lamellar pressure flaking and little tertiary retouch; single small flake forms notch.
-1 Winterset chert
-Reed type (Bell 1958)
-late Late Woodland and Great Oasis periods
-Figure A.9

SN.15	lg	wd	th	ba wd	ba lg	notch dpth	Sites
n=2 (est.)-		22	7.5	18.8	16	3.9	PK251

-(ovate?) blade; thick biconvex cross-section; wide deep notch set high on the blade; straight base with rounded corners (no grinding); variable lamellar and expanding soft hammer flaking with continuous steep tertiary retouch; multiple flake notch tends to "constrict" lower half of point.
-provisional Fort Dodge type (Morrow 1984)
-(later) Archaic
-Figure A.10

SN.16							
n=3 (est.)-		1.6	8	2.0	1.2	.4	PK149

-rough triangular blade; thick uneven biconvex cross-section; broad shallow indentations for notches; sub-convex base with grinding; rough variable soft hammer flaking and extensive resharpening; multiple flakes form indentations.
-provisional Conrad type (Morrow 1984)
-Late Archaic
-Figure A.10

Other Side Notched

Large Biface: 13BN210; approximately 150 mm long and 43 mm wide secondary biface; excurvate blade; broad expanding flakes and discontinuous secondary retouch; convex base; small single flake notches set near the base; probably Burlington chert; Figure A.10.

Type							
CN.1	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=1	53	29.7	8.7	26.5	15.1	12.1	PK225

-triangular blade with serrated edges and alternate beveling; biplano cross-section; wide corner-removed notches with barbed shoulders; thinned sub-concave base with grinding and pointed corners; broad flat soft hammer expanding flakes with secondary lamellar edge beveling; multiple beveled flakes form notches (ground).
-Kirk type (Coe 1964)
-Early Archaic I and II
-Figure A.11

CN.2

n=3	$\bar{x}$=56.3	35.1	10.5	21.6	11.7	9.6	BN110
range=	52.3-61.5	33.5-37.4	9.5-12.4	19.6-24.5	10.8-12.3	9.5-9.8	PK186,149

-2 broad sub-triangular and 1 broad ovate blade; even biconvex cross-section; corner notches with barbed shoulders; 2 straight and 1 convex base (no grinding); broad soft hammer lamellar flaking and soft hammer tertiary retouch; one example resharpened; 1-2 large deep flakes form notches.
-Rice Corner Notched (triangular blade) (Marshall 1958; Chapman 1975)
-Snyders or Manker (ovate blade) (White 1968)
-Middle Archaic I (and later) period for Rice C.N.
-Middle Woodland period for Snyders/Manker
-Figure A.11

CN.3

n=2	#1 47.3	31.5	8.3	14.4	10.5	7.9	BN32,259
	#2 57	45.5	8.5	17.5	14.6	14.2	

-broad sub-triangular blade (resharpened); biconvex cross-section; wide deep basal notches and long barbs (often broken); rough rounded stem (often faceted); broad flat soft hammer expanding flakes with soft hammer tertiary retouch; multiple flakes form notches.
-Smith Basal Notched type (Marshall 1958; Chapman 1975).
-Late Archaic period
-Figure A.11

Type							
CN.4	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=2	#1 41.6	-	6	21	9.1	6.6	BN103
	#2 -	34	7.1	22.1	12.5	8.1	PK122

-broad ovate blade; thin biconvex cross-section; small corner notches and barbs; straight base (no grinding); broad flat overlapping soft hammer expanding flakes with discontinuous tertiary retouch; single flake forms notch; made on twisted primary flakes.
-2 Maynes Creek chert
-No type name
-Woodland period
-Figure A.11

CN.5

	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=6	x̄=54.7	27.2	8.4	20.2	13.7	9.6	BN38,203
range=	48-58.8	22.2-34.4	6.5-10.2	14.6-27.9	11.9-15.6	8.1-10.6	161,162
							PK149,168

-ovate blade(often resharpened and asymmetrical); biconvex cross-section; large deep round notch removed from a rounded blade corner; convex base (no grinding); flat lamellar soft hammer flaking and discontinuous lamellar retouch (burrs often left on flake face); single large round flake forms notch.
-1 Winterset chert
-Gibson type (White 1968)
-Middle Woodland period
-Figure A.11

CN.6

	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=21	x̄=37.9	20.1	6.1	11.0	7.4	6.5	BN14,105,
range=	21.6-57.6	17-27.9	4.5-8	4.5-17.6	5.6-10.7	4-8.7	27,32
							DA6
							PK197,219,279,
							165,163,175,
							111,150,116,
							158

-somewhat narrow sub-triangular to triangular blade, sometimes with serrated edges; biconvex cross-section; corners removed to create small barbs and a small expanding stem; straight to sub-convex base with grinding (a few are faceted) and pointed corners; very fine collateral lamellar pressure flaking and continuous tertiary retouch; single flake and retouch form notches; several points with impact fractures.
-5 Maynes Creek, 1 Burlington and 1 Winterset chert
-Creston type (Morrow 1984)
-(Early) and Middle Woodland period
-Figure A.12

Type CN.7	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=16	$\bar{x}$=39.0	24.2	6.1	15.2	7.5	5.8	BN37,105,216, 152,103,14, 168,27,140 PK175,165, 235,111
range=	30-46	21.8-27.5	4.4-8.1	12.1-18.5	6-9	4-6.9	

-broad ovate to sub-triangular blade; large deep notches set at the lower corners of the blade; barbed shoulders and short widely expanding stems; straight to sub-convex base (3 ground); very fine collateral lamellar pressure flaking and continuous tertiary retouch; line of overlapping flakes to form notch.
-1 each Maynes Creek, Warsaw (blue), and Winterset chert and 1 Tongue River silicified sediment
-Pelican Lake type (Perino 1971)
-Middle Woodland period
-Figure A.12

CN.8

	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=2	#1 51	28.3	8.4	-	12.3	10	BN161
	#2 28	19	8.1	18.3	11	7.9	PK111

-broad flat ovate blade (resharpened); biconvex cross-section; large round deep notches set above the basal corners leaving barbed shoulders and a pointed base; convex base with no grinding; soft hammer broad expanding flakes with tertiary beveling on some edges; single large flake with edge retouch to form notch.
-Norton type (White 1968)
-Middle Woodland period
-Figure A.11

Type

CN.9	lg	wd	th	ba wd	ba lg	notch wd	Sites
n=2	#1 -	27.6	9.6	19.2	8.3	6.5	PK109
	#2 -	32.9	12.3	22.5	9.7	8.5	BN127

-(ovate) blade; biconvex cross-section; corner-removed notches leave pointed shoulders; concave thinned base (1 ground) with "eared" corners; various soft hammer lamellar and expanding flakes meeting near center and discontinuous tertiary retouch; 1-3 notch flakes.
-provisional Turin type (Morrow 1984)
-possibly Middle Archaic II-III periods
-Figure A.13

CN.10

n=2	#1 -	31.7	5.1	18.8	5.2	3.6	PK155
	#2 3.7	31	5.1	-	5.9	4.1	BN125

-very broad short triangular blade; thin biconvex cross-section; long deep notches trending from corners; straight base (no grinding) with pointed corners; short stem and long barbs; fine flat soft hammer and pressure lamellar flaking; continuous tertiary retouch; multiple flakes form notches.
-provisional Okoboji type (Morrow 1984)
-late Middle to early Late Woodland periods
-Figure A.13

CN.11

n=4	$\bar{x}$=16.8	12	7	11.3	6.5	5.25
range=	16-18	11-13	-	11-12	6.7	4-7

-short triangular blade; thick biconvex cross-section; small notches or indentations above corner of base; straight thinned base (no grinding) with pointed corners; lamellar pressure flaking and continuous steep tertiary retouch; 2 or more steep shallow flakes form notches.
-similar to the Merom type
-possibly Late Archaic
-Figure A.13

Other Corner Notched Forms

Dayton: 13PK175; ovate blade; corner-removed notch; convex base (no grinding); thick cross-section; pressure flaking; probably Middle Woodland period; (Morrow 1984); Figure A.13.

Logan Creek Scraper: 13PK175; unifacial tool with high, deep corner notches and concave base; probably Middle Archaic period (Morrow 1984); Figure A.13.

Manker Variant: 13PK150; sub-triangular blade with serrations; deep round corner notches; convex base; soft hammer and pressure lamellar flaking; Middle Woodland period; (White 1968); Figure A.13.

Koster: 13BN103; small ovate blade; corner-removed notches; straight base; fine lamellar pressure flaking; Late Woodland period (Perino 1971); Figure A.13.

Type

T.1	lg	wd	th	Sites
n=15	$\bar{x}$=22.5	12.5	3.0	BN114,27,103,172
range=	15.8-31.5	8.7-16	1.5-4.1	PK165

-straight side isoscelese triangles with approximately 2:1 length: width ratio or less; thin biconvex cross-section; straight or sub-convex base; multiple single flake notches; large side notches set high on the blade with variable basal and other side notches; made on flakes by fine pressure flaking and continuous tertiary retouch.
-4 specimens from PK165 made from local gray shaley chert
-Harrell type (also similar to Huffaker and Cahokia types) (Morrow 1984)
-late Late Woodland and Great Oasis periods
-Figure A.14

T.2				
n=8	$\bar{x}$=21.7	13.8	3.4	BN114,110,103
range=	16.3-23.5	13-15.6	2.5-4.4	PK165

-straight sides isoscelese triangles with less than 2:1 length: width ratio; thin biconvex cross-section; straight base; single flake side notches set below the mid-point; made on flakes by fine pressure flaking and continuous tertiary retouch.
-2 Winterset and 1 Shaley chert
-Des Moines type (Morrow 1984)
-late Late Woodland and Great Oasis periods
-Figure A.14

Type				
T.3	lg	wd	th	Sites
n=6	$\bar{x}$=25.7	14.4	3.8	BN168,27,140,114
range=	22-34	11.6-16.2	3.3-4.6	PK165

-straight sides isoscelese triangles with approximately 2:1 length: width ratio; thin biconvex cross-section; straight base; no notches; fine lamellar pressure flaking and continuous tertiary retouch.
-Madison type (Scully 1951, Perino 1968, Morrow 1984)
-late Late Woodland, Great Oasis and Oneota periods
-Figure A.14

T.4

n=2	#1 17.3	16.8	3.3	BN182
	#2 12.8	18.3	3.1	PK165

-same attributes as Madison (T.3) type but with sub-concave base.
-1 Shaley gray chert
-Madison type variant
-late Late Woodland, Great Oasis and Oneota periods.
-Figure A.14

T.5

n=4	$\bar{x}$=15.2	11.5	2.8	BN38,103
range=	12.8-18.9	10.4-12.1	2-3.3	

-small almost equilateral triangles with slightly convex sides; thin biconvex cross-section; made on flakes from fine lamellar pressure flaking that covers only part of the primary flake surface.
-1 Winterset chert
-Fresno type (Bell 1960)
-late Late Woodland, Great Oasis and Oneota periods
-Figure A.14

Type

T.6	lg	wd	th	Sites
n=5	$\bar{x}$=33.8	20.7	5	BN103,168
range=	30-38.5	19.6-22.5	3.8-6.5	PK165

-large irregularly shaped triangular forms; biconvex cross-section; asymmetrical convex base; made on flakes with variable soft hammer and pressure lamellar flaking and discontinuous tertiary retouch; burrs and other unfinished spots remain; no notches.
-1 Shaley gray chert
-no type name
-late Late Woodland, Great Oasis and Oneota periods
-Figure A.14

T.7

n=10	21.2	13.0	3.7	BN103,110,114
range=	19-23.5	10-16.1	1.9-5.3	PK165,111,175

-small irregularly shaped isoscelese triangles with asymmetrical edges and no notching; unevenly biconvex cross-section; primary flakes with irregular zones of lamellar pressure flaking and patches of tertiary retouch; burrs and other unfinished spots remain.
-3 Shaley gray chert
-no type name
-late Late Woodland, Great Oasis and Oneota periods
-Figure A.15

T.8

n=11	$\bar{x}$=18.9	10.4	2.8	BN103,104,110
range=	13.4-25	7-14.4	2.1-4	PK165

-irregular triangular forms, some narrow and others broad; uneven biconvex cross-section; mostly convex bases; shallow (often unmatched) side notches set below the mid-point; flakes and chunks of Shaley chert with minimal pressure flaking along edges and on the original bulb of percussion; single flake notches; some Shaley gray chert pieces are abraded into shape rather than chipped.
-1 Winterset chert, 9 Shaley gray-tan chert
-synonyms of Klunk, Wanda and Reed types (Munson and Harn 1971; Morrow 1984)
-late Late Woodland and Great Oasis periods

Type T.9	lg	wd	th	Sites
n=1	40.9	16.5	3.4	13DA162

-long isoscelese triangle with no notches (more than twice as long as wide) straight sides and slightly sub-concave base; thin biconvex cross-section; oblique collateral pressure flaking and continuous tertiary retouch.
-Winterset chert
-no type name (associated with Oneota burials) (Wedel 1959)
-Oneota period
-Figure A.15

Ovate

n=3	$\bar{x}$=27	18.8	4.9	BN110,203
range=	22.7-34.5	14.2-24.4	4.1-5.6	

-broad excurvate blade with round base and no notches; biconvex cross-section; flake modified by soft hammer and pressure expanding flakes with discontinuous tertiary retouch.
-variable size indicates different time periods and functions (smaller similar to Nodena) (Bell 1958).
-Figure A.13

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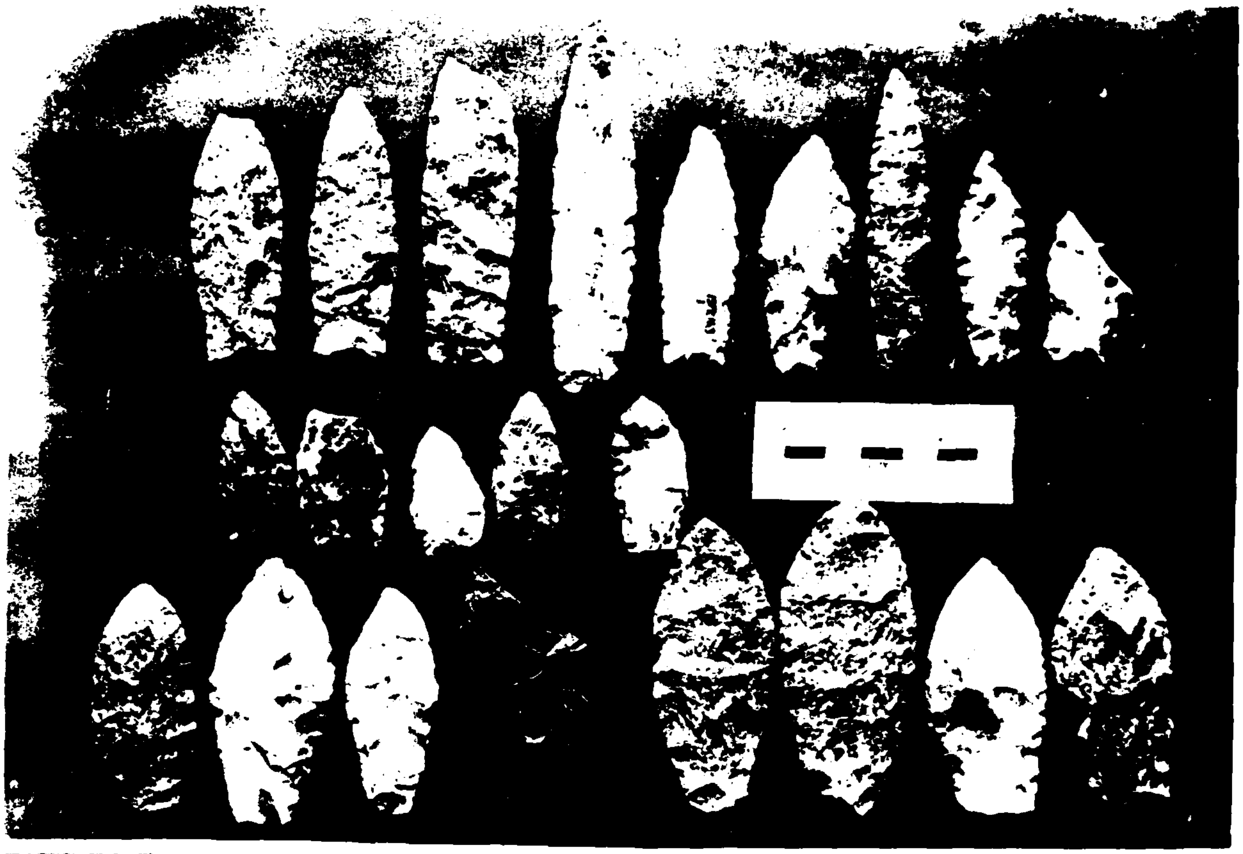


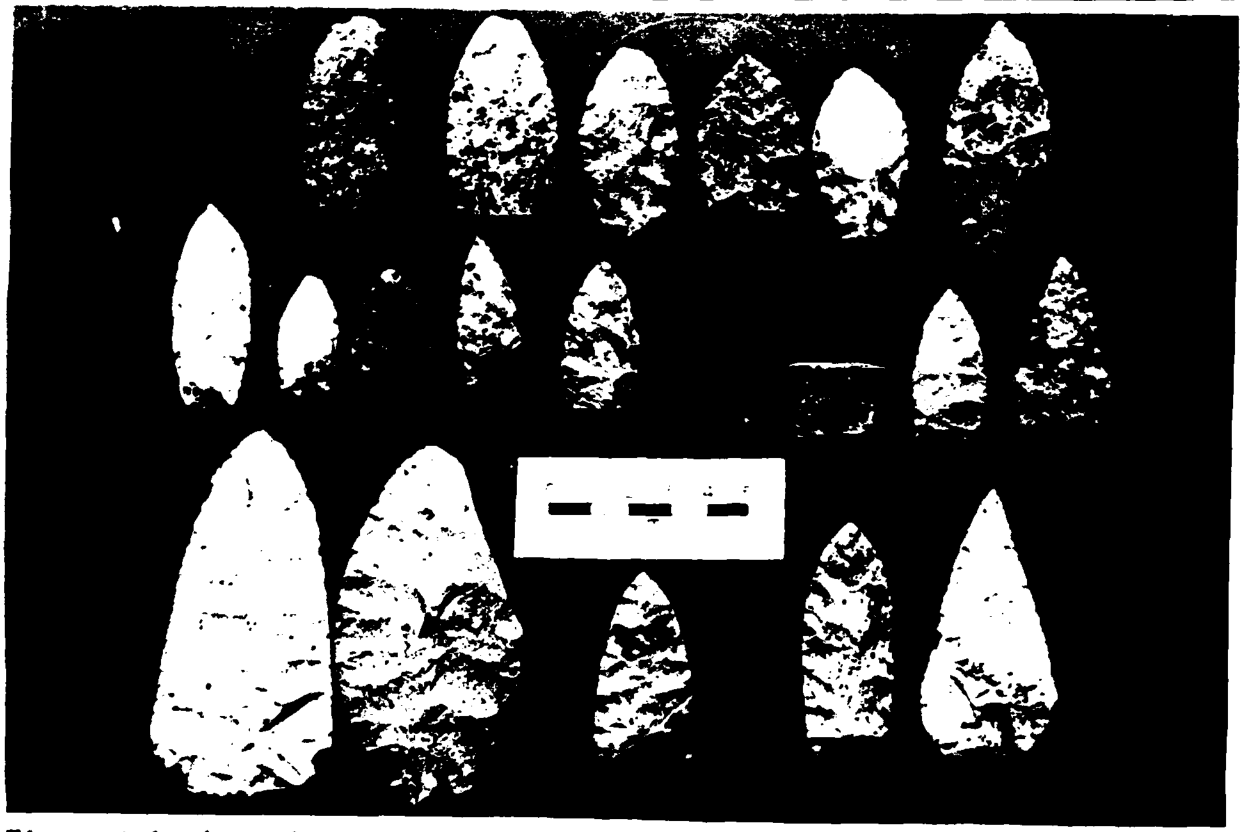


Figure A.1: (above) a) type L1; b) type L1a; c) types L2 & L2a (far right).

Figure A.2: (below) a) type L3 & L3a (far left); b) type L4; c) other lanceolate forms (left-right) fluted base, Meserve, Dalton; d) preforms (left-right) 13PK219, 13BN230, three misc.

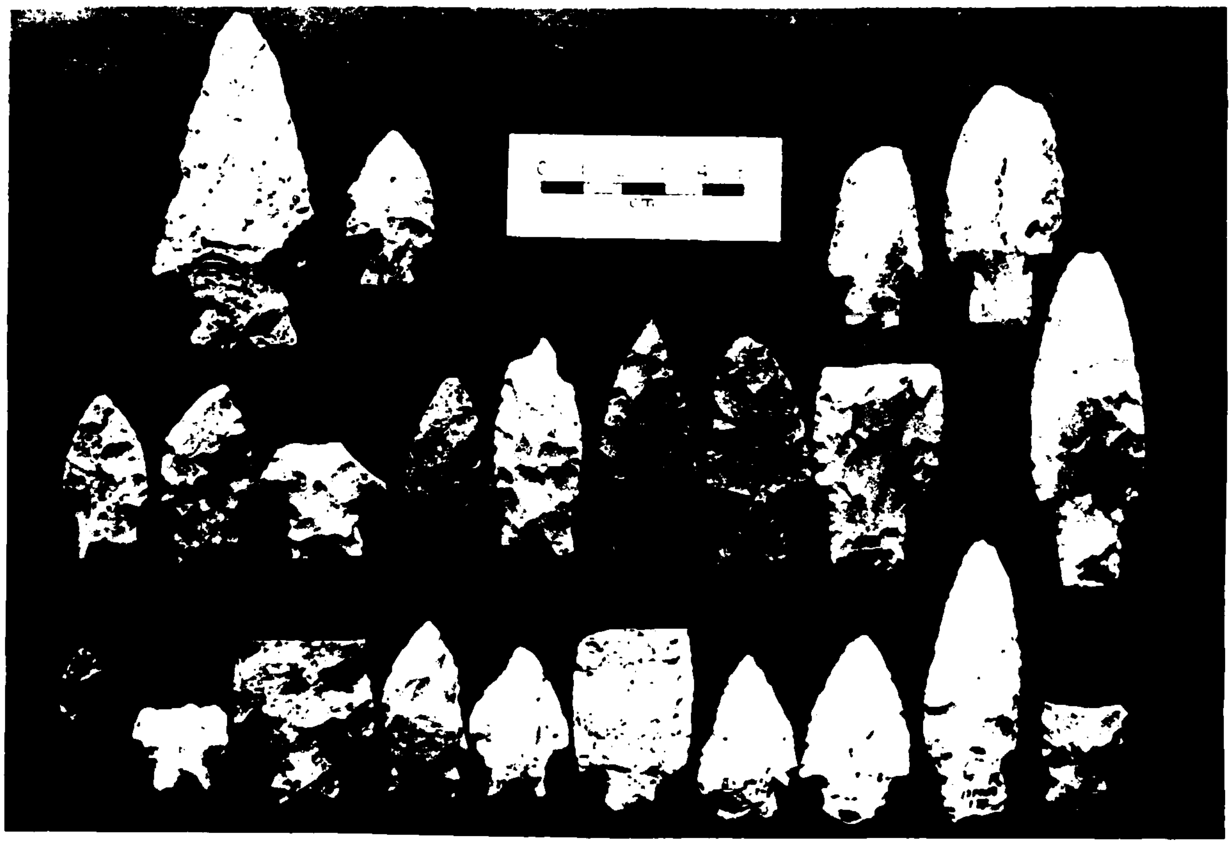
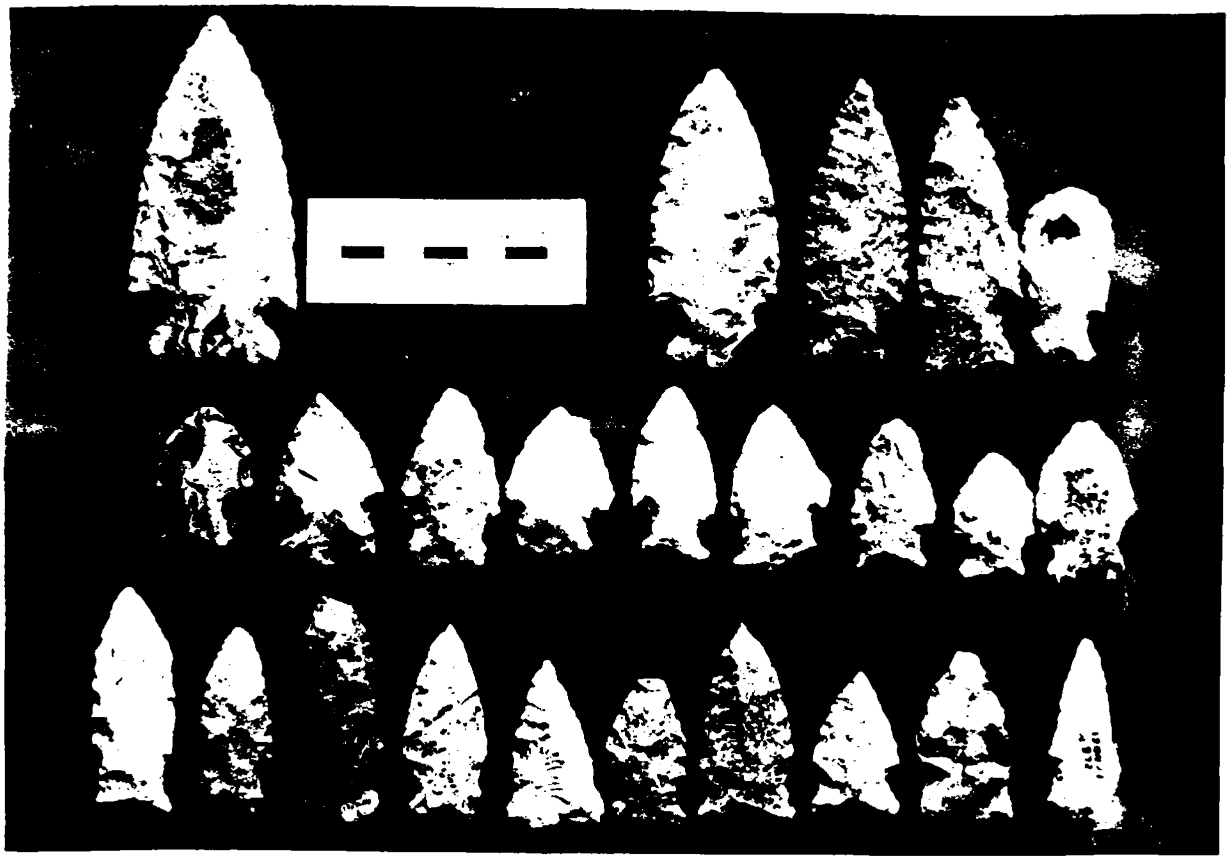


Figure A.3 (above): a) type St.1; b) type St.2; c) type St.3.

Figure A.4 (below): a) type St.4; b) type St.5; c) type St.6.

Figure A.5 (above): a) type St.9; b) type St.8; c) type St.7.

Figure A.6 (below): a) type St.10; b) var. St.9; c) type St.11; other stemmed d) 13BN115; e) Afton-like; f) Manker var.; g) Lost Island; h) bifurcate stem.



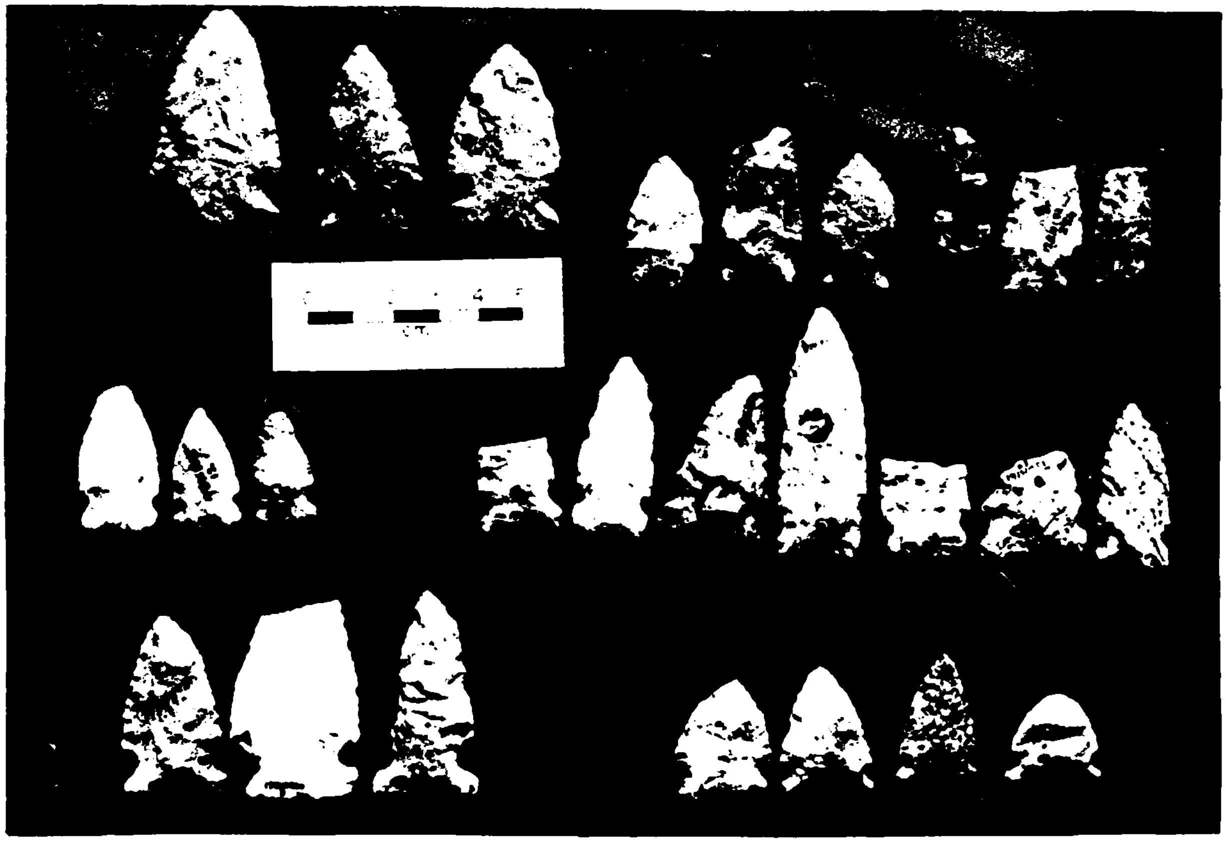
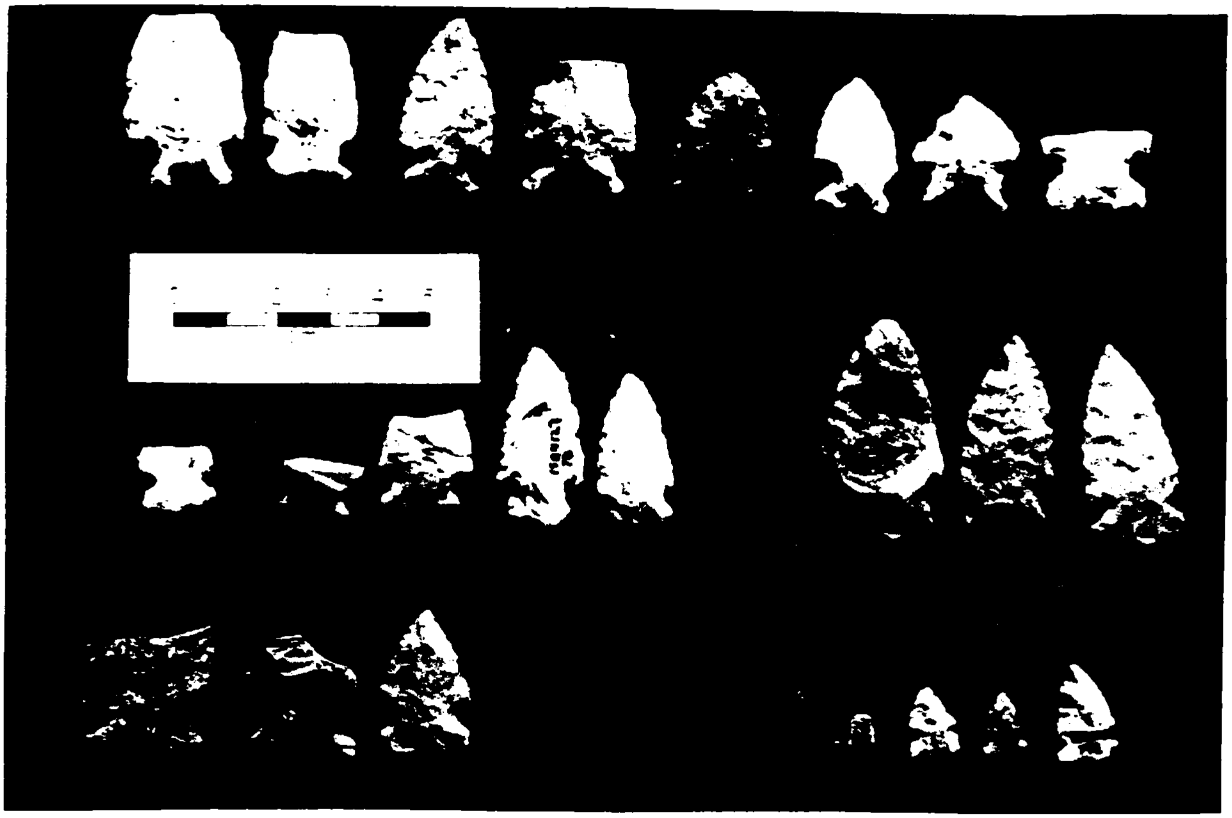


Figure A.7 (above): a) type SN1; b) type SN2; c) type SN3; d) type SN4.

Figure A.8 (below): a) type SN5; b) type SN6; c) type SN7; d) type SN8; e) type SN9; f) type SN10.



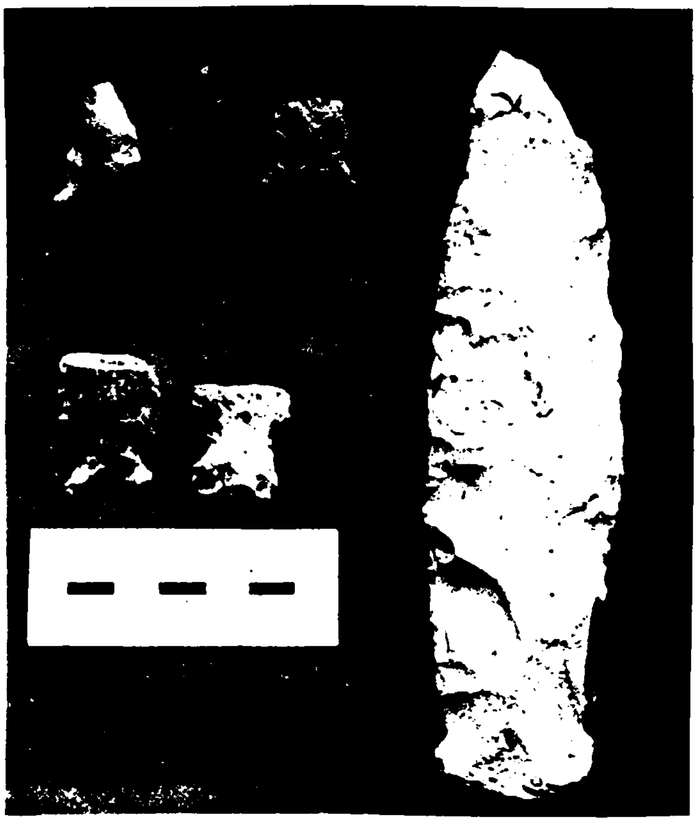


Figure A.9 (above): a) type SN11; b) type SN12 small var.; c) type SN12 large var.; d) type SN13; e) type SN14.

Figure A.10 (below): a) type SN16; b) type SN15; c) other SN, 13BN210.

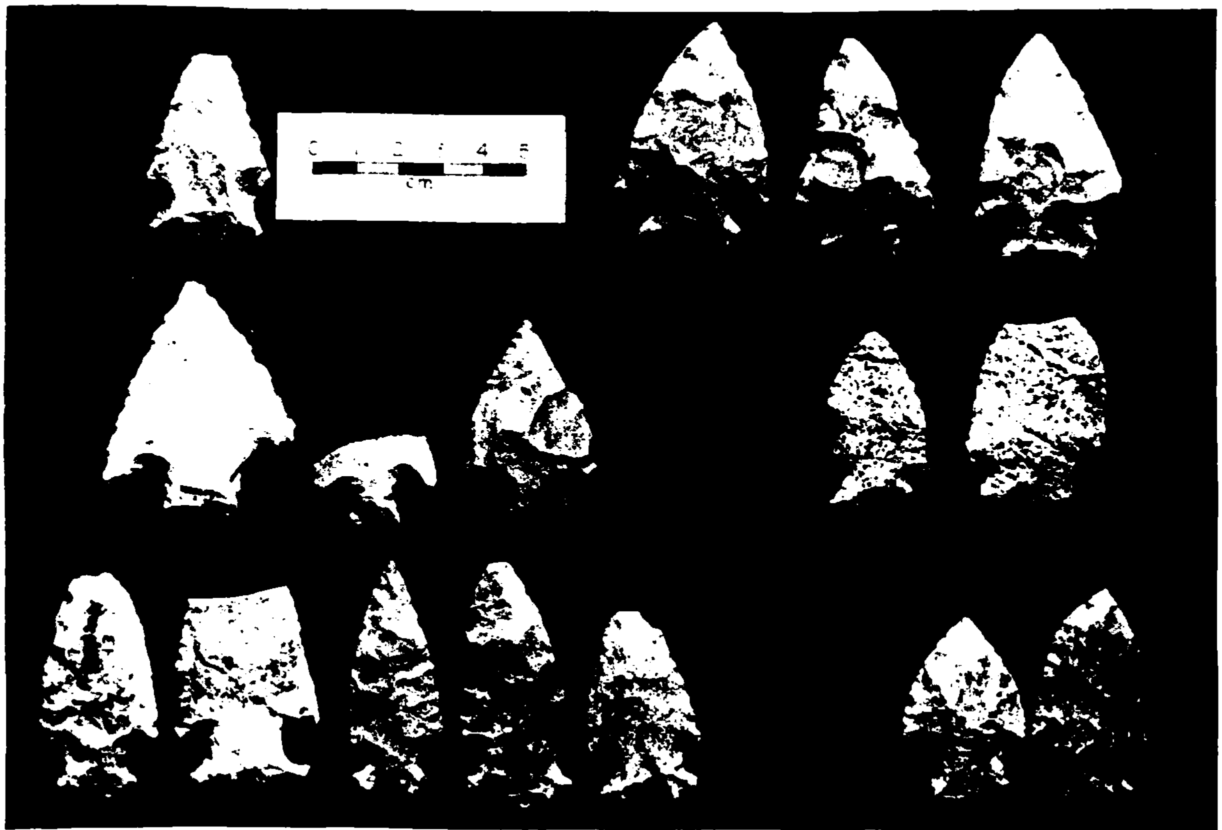
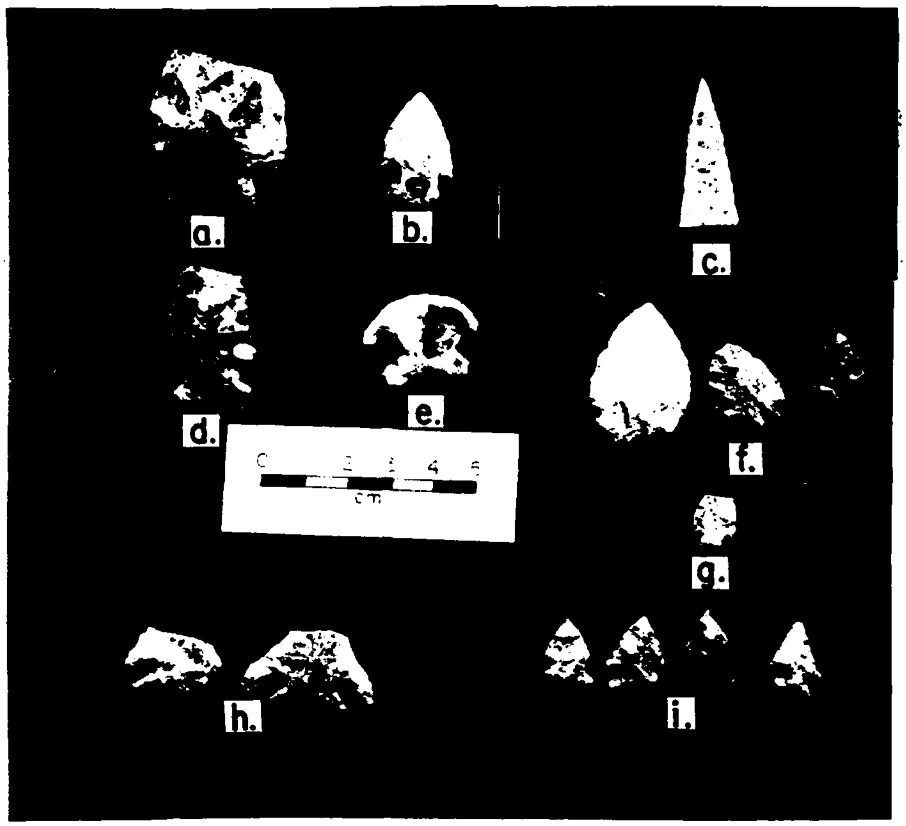


Figure A.11 (above): a) type CN1; b) type CN2; c) type CN3; d) type CN4; e) type CN5; f) type CN8.

Figure A.12 (below): a) type CN6; b) type CN7.



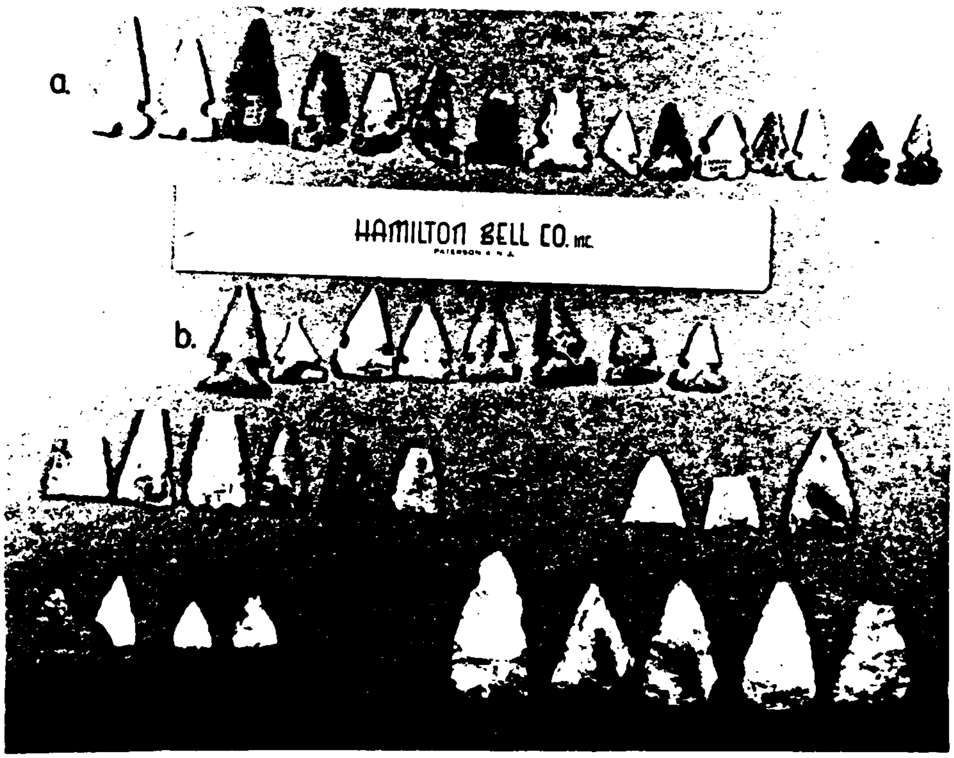


Figure A.13 (above): a) type CN9; b) Dayton; c) type T9; d) Manker var.; e) Logan Creek scraper; f) Ovate; g) Koster; h) type CN10; i) type CN11.

Figure A.14 (below): a) type T1; b) type T2; c) type T3; d) type T4; e) type T5; f) type T6.

Figure A.15: a) type T7; b) type T8.

GLOSSARY OF LITHIC TERMS

Flake Production

Primary Flake - Decortication flake with the entire dorsal surface covered with cortex.

Secondary Flake - Decortication flake with both flake scars and cortex on the dorsal surface.

Interior Flake - Flake with no cortex on the dorsal surface and a high platform angle.

Thinning Flake - Thin, irregular flake with thinning flake scars on the dorsal surface and a low striking platform angle; usually a by-product of tool manufacture. Striking platforms are generally a portion of the tool edge.

Tertiary Flake - Smaller than 1 cm in diameter, wafer thin, and often lacks a striking plaform (pressure and/or retouch flakes).

Flake Fragment - Flake that is usually broken and is lacking in any distinct attributes.

Angular Shatter - Angular chunk of stone with broken facets but lacking a striking platform, bulb of percussion, and ripple marks.

Tabular Shatter - Flat, rectangular chunk of stone with broken facets but lacking a striking platform, bulb of percussion, and ripple marks.

Natural Flakes - Flakes that are not manufactured by humans but are the result of natural processes. They generally lack bulbs of percussion, striking platforms, and cones of percussion. The edges are often rounded.

Unmodified and Nonlocal Cobbles - Stones and cobbles without observable modifications; must be distinguished from natural rock in the soil at the site.

Tested Cobbles - Cobbles with one striking platform and a few flakes removed; must not show evidence of use-wear along the flake edge (i.e. as a chopper).

Working Core - Stone greater than 50 mm in diameter with one or more striking platforms, cortex removal, and evidence of primary flake production from at least one shaped flaking face.

Bipolar Core - Core which indicates the use of an anvil during detachment procedures. The end opposite the striking platform is extremely battered and flake scars have opposing bulbs of percussion.

Exhausted Core - Stone less than 50 mm in diamter with most or all of the cortex removed, one or more striking platforms, and evidence of primary flake

production from two or more flaking faces; typically too small to handle effectively while knapping.

Core Rejuvenation Flakes - Flakes detached for the purpose of stabilizing or reconstructing striking platforms on a core; striking platforms have evidence of preparation.

Flake Tools

Utilized Flake - Flake of any type which has evidence of use as a tool but has not been modified to perform a specific task.

Blades - Flakes which have evidence of platform preparation and are equal to or greater than twice as long as they are wide, with more or less parallel lateral edges.

Retouched Flake - Any flake which has undergone initial edging in order to create a specific tool type or resharpen a dull edge.

Graver - Small, pointed projection that may have been used for incising; produced by pressure flaking or by the removal of two single spalls.

Spokeshave - Tool with a concave scraping surface that has been worked into the tool edges or ends.

Backed Knife - A utilized or retouched flake which resembles an isosceles triangle in cross section. The base of the triangle represents backing while the apex has evidence of use-wear, indicating a working edge.

Chipped Stone Tools

Drill - A tool which has been flaked into an elongated point. Generally has an expanding base and tapered bit as well as a bitriangular cross section and steep secondary thinning or retouching.

Uniface - One face has been entirely or partially shaped by flaking.

Primary Biface - A round, oval, triangular, or rectangular form which has undergone primary flaking over the entire surface of both faces but lacks any evidence of hafting.

Secondary Biface - A round, oval, triangular, or rectangular form which has undergone secondary as well as primary flaking over the entire surface of both faces but lacks any evidence of hafting.

Projectile Point - Bifacial or unifacial tool which is longitudinally symmetrical. The proximal end has been prepared for hafting and the distal end is pointed. Surfaces and edges have been shaped by initial edging, primary and secondary flaking, and/or tertiary flaking.

Hide Scraper - Bifacial or unifacial tool which generally has a blunt, convex, steep-angled working edge that has indications of use as a hide scraper (i.e. edge rounding, polish, etc.)

Use-Wear

Edge Crushing - Collapsed and crushed edge that is roughly rounded and abraded from use.

Edge Rounding - Edge that is smoothed and rounded from use; usually occurs after edge crushing, when the edge has been stablized; associated with extensive use.

Feather Terminated Flake Scar - Distal end of the flake scar terminates into a poorly defined interior border that is barely visible on the tool's edge when examined under a microscope.

Hinge Terminated Flake Scar - Distal end of the flake scar terminates into a curled interior border.

Step Terminated Flake Scar - Distal end of the flake scar terminates into an interior border that is perpendicular to the fracture plane.

Bright Polish - Reflects a considerable quantity of light in a mirror-like manner; smooth texture.

Bright Greasy Polish - Lacks the smoothness of bright polish and has a greasy luster.

Dull polish - Intense, relatively dull polish with a matte texture.

Dull Greasy Polish - Varies in brightness, but is relatively dull with a greasy luster.

Transverse Break - Break that extends through the tool, usually parallel or perpendicular to the axis of percussion.

Oblique Break - Characterized by small edge spalls and broken corners; a break that does not extend through the entire tool.

Perpendicular Orientation - Wear patterns are perpendicular to the tool edge.

Oblique Orientation - Wear patterns are oblique relative to the tool edge.

Detachment Techniques

Pressure Flaking - The manual pressure technique consists of holding the incipient tool on a pad or cushion of leather or some other suitable material in the left hand or on a stationary anvil on a horizontal or slightly oblique plane and applying the distal edge of the compressor (pressure flaking tool),

held in the right hand, to an edge of the incipient tool and pressing off a flake. Induction of mechanical force, in the form of pressure exerted simultaneously in an upward direction, away from the incipient tool, and inward, toward the incipient tool. The compressor may be a length of bone, antler, hard wood, or an animal tooth or claw, as well as stone (Honea 1965:35).

Hard-Hammer Percussion - The core is held in the left hand on a horizontal or slightly oblique plane; a sustained blow is struck on the outer edge of the core platform with the subround end of a hammerstone held in the right hand, inducing the detachment of a flake from the underside of the core. Hard-hammer manufactured flakes are commonly thickest at their proximal ends due to the marked bulb produced in percussion (Honea 1965:30).

Soft-Hammer Percussion - The core is positioned as in hard-hammer percussion but it is struck with the convex distal edge of a cylinder-hammer; this kind of percussor consists of a rounded length of bone, antler, hard wood, or stone softer than the core material. Flaking quite similar to that produced with a free-hand applied cylinder-hammer may also be achieved in the following manner: The edge of the core to be worked is rested on the convex surface of a spherical or bluntly rounded anvil of hard wood or soft stone at an angle of less than 90 degrees and a blow is struck at a point near the middle or towards the edge of the core nearest the anvil with the bluntly rounded end of a cylinder-hammer; the flake detached comes off the upper face of the core. Cylinder-hammer flakes are much thinner at their proximal ends than hammerstone (hard-hammer) flakes. This proximal thinning is due to the flat, diffuse bulb produced in flaking with a cylinder-hammer (Honea 1965:30).

Bipolar Technique - A technique occurring mainly in conjunction with working of small pebble cores. A pebble core is held vertically on a resilient anvil with the left hand and is struck on the proximal or top end with a hammerstone held in the right hand. The anvil may be either soft stone, a block of hard wood, the earth, or a padded thigh of the knapper. Bipolar flakes are usually long and narrow. They sometimes exhibit a major bulb of percussion on the proximal end and a minor bulb of percussion on the distal end. The latter is due to rebounding secondary mechanical force that is produced by the core being pressed violently against the anvil during percussion. Minor bulbs are probably not produced when the earth, wood, or padded thigh are used as anvils (Honea 1965:31)

APPENDIX B

Ceramic Typology
Saylorville Lake Area

McBRIDE WARE
(Early Woodland period)

Paste: coarse silts and clays with fine sand inclusions; tempered with generous amounts of grit, sand, crushed rock (.5-1.5mm) and probably grog; coarse textured, massive structure; relatively hard (3-4 on Mohs scale) and heavy walled.

Color: exterior surface brown (7.5YR5/4) to very dark brown (7.5YR2.5/0); interior surfaces somewhat darker (reduced); cores like interior surface (reduced).

Surface Treatment: interior broadly smoothed while damp; shallow finger impressions common; exterior covered by deep, coarse cord roughening in soft paste; cords trend vertically near the lip and bend to oblique on the body.

Method of Manufacture: probably building and thinning by paddle and anvil.

Form: relatively small, squat conoidal vessel with very slightly insloping rim and (probably) pointed base; lips tend to be round; rims straight, shoulders steep and virtually non-existent.

Decorations: rarely decorated on the interior rim; half of lips with tool notches or punctates; irregular row of embosses placed on upper rim close (8mm) to the lip; upper and lower rim/shoulder usually decorated with zones of parallel lines trailed in soft paste; lines may be horizontal or oblique; sometimes groups of short slashes are present.

Synonymy: Black Sand Incised from the Mississippi River Valley (Griffin 1952); Spring Hollow Incised from eastern Iowa (Logan 1976); LaMoille Thick from southern Minnesota (Wilford 1955); Fox Lake ware (early) from southwestern Minnesota (Hudak 1976; Anfinson et al 1979); Crawford ware from western Iowa (Benn n.d.).

Types: McBride Trailed is decorated with zones of trailed lines or slashes. McBride Cord Roughened (provisional) is the undecorated version that probably will appear when more of this pottery is studied.

Figure B.1

Table B.1

HIGH BRIDGE WARE
(Middle Woodland period)

Paste: coarse silts and clays; tempered with moderate amounts of very coarse (.5-3mm) crushed igneous rock, grit, few pebbles and possibly grog; coarse textured, blocky to slightly laminated structure; moderately hard (3 Mohs scale) and heavy walled.

Color: exterior surface yellow red (5YR5/6) to yellow brown (10YR5/4) to black (7.5YR2.5/0); interior surface red (2.5YR4/6) to strong brown (7.5YR5/6) to black (7.5YR2.5/0); cores are reduced versions of surfaces; exterior firing clouds common; interior carbon incrustations occasional.

Surface Treatment: interior wiped smooth while wet; occasional finger impression present; exteriors finished according to type, but all were roughened initially by a cord wrapped paddle; cord impressions are bold.

Method of Manufacture: building and thinning by paddle and anvil.

Form: large cylindrical vessels with conoidal bases; steep shoulders, slightly constricted necks, straight to slightly curved rims, mostly insloping or vertically oriented rims; lips mostly tooled flat to flat with rounded edges (r-f) and sometimes slightly extruded or flaring; embossing on upper rim may result in a slight interior channel because of displacement of the walls.

Decorations: one-third to one-half with stamping (cws, dentate) on the interior upper rim; few lips with tool, fingernail or cws stamp; exterior decorations in zones of rows and columns of stamps and trailed lines according to type; a large majority of rims of all types have a row of low-relief embosses below (15-19mm) the lip.

Synonymy: Morton and Havana ware in the Mississippi and Illinois River Valleys (Griffin 1952); "Amana" and Cedar wares in eastern Iowa (Weichman and Tandarich 1974; Benn and Thompson 1977); Fox Lake ware in southern Minnesota (Hudak 1976; Anfinson et al 1979); Sonota complex ceramics in the Dakotas (Newman 1975); Valley ware in western Iowa (Kivett 1949; Benn ed. 1981); Rowe ware in southwestern Iowa (Tiffany 1978).

Tables B.1, B.2

Types:

High Bridge Punctated: pastes similar but finer textured than Polk City ware; ext. surface cord roughened; decorated with vertical rows of reed or double-pointed punctations on the upper and lower rim; synonymy, Sister Creeks Punctated (Griffin 1952); Figure B.2.

High Bridge Trailed: exterior surface cord roughened; 40% of lips are decorated; exterior upper and lower rims and body decorated with zones of parallel trailed lines in horizontal, oblique or curvilinear patterns; no stamping associated with trailed lines; synonymy, Fox Lake Trailed (Hudak 1976; Benn 1982); Figure B.4.

High Bridge Cord Roughened: exterior cord roughening almost always vertical and occasionally slightly smoothed; one-third with stamping (cws, dentate) on interior upper rim; most rims embossed; otherwise no decoration; synonymy, Havana Cordmarked (Griffin 1952), Fox Lake Cordmarked (Hudak 1976; Benn 1982), Valley Cord Roughened (Benn ed. 1981); Figures B.5, B.7.

High Bridge Plain: exterior surfaces are plain or mostly smoothed; some lips are extruded; three-quarters of the rims are embossed; almost half of the interior upper rims are stamped (cws, dentate); no other decoration is present on the exterior; synonymy, Havana Plain (Griffin 1952); Figures B.5, B.7.

High Bridge Brushed: (provisional) exterior surface is vertically or obliquely brushed by a fine toothed tool or coarse brush; exterior embossing is the only decoration; synonymy, decorative variant of Baehr brushing (Griffin 1952); Figures B.5, B.7.

High Bridge Stamped: half of the exterior surfaces cord roughened or brushed, half are plain; more than half of the interior upper rims with stamped (cws. dentate) decoration; most rims embossed; exterior decoration of rows, columns or triangular designs of dentate or cws stamps, usually in more than one zone; individual dentate teeth are bold (3.1x2.6mm); decorations done in soft paste; synonymy, Havana Cord-Wrapped-Stick Stamped (Loy 1968), Naples Stamped (several varieties; Griffin 1952), Havana Zoned (Ibid.), Valley ware (Benn ed. 1981), Fox Lake Cord-Wrapped-Stick Stamped (Benn 1982); Figure B.3.

HOPEWELL WARE
(Middle Woodland period)

Paste: fine silts and clays; tempered with crushed limestone (leached); fine textured and massive structure; moderately hard (3 Mohs scale).

Color: surfaces and core yellow brown (10YR5/4) to very dark brown (10YR3/1).

Surface Treatment: interior and exterior smooth and even.

Manufacture: --

Form: (upper rim only) vertically oriented rim, s-shaped (channeled) rim, flat lip; channel 21mm wide and 2.5mm deep.

Decoration: fine cross-hatched exterior upper rim (opposite channel) with horizontal row of reed punctates immediately below (punctates punched horizontally from left).

Synonymy: Hopewell Zoned from the Illinois and Mississippi River valleys (Griffin 1952).

Figure B.2

Table B.1

MADRID WARE
(early Late Woodland period)

Paste: coarse silts and clays; tempered with moderate amounts of coarse (.5-4mm) crushed igneous rock; coarse textured, blocky paste; sherds moderately hard (3 Mohs scale) and dense.

Color: interior surface brown (7.5YR5/4) to reddish brown (5YR4/3) to black (5YR2/1); exterior surface brown (10YR5/3) to dark brown (7.5YR3/2); firing clouds common; cores are reduced surface colors.

Surface Treatment: interiors wiped smooth while wet; occasional finger impressions; interior rims wiped smooth and very even; exteriors begin cord roughened, and some types are smoothed later.

Method of Manufacture: building and thinning with paddle and anvil.

Form: sub-conoidal bodies with sharply rounded bases, gently expanding shoulders, constricted necks, and curved rims that often flare; upper rim and lip often thinned; most lips rounded and smooth.

Decorations: interior rim and lip decorations are infrequent; exterior decoration confined to the stamped and punctated types; generally spartan decoration.

Synonymy: Weaver ware in the Illinois and Mississippi River valleys (Griffin 1952); Linn ware in eastern Iowa (Logan 1976; Benn 1978); Arthur Cord Roughened in southern Minnesota (Benn 1982); some Lake Benton ware in southern Minnesota (Anfinson et al 1979); Held Creek ware in western Iowa (Benn ed. 1981).

Tables B.2, B.3

Types:

Madrid Cord Roughened: rims usually curved and vertical or flaring; few tall (5-6cm) and short (1-2cm) rims but a plurality are medium height; shoulders smoothly curved and gently flaring; all exterior surfaces cord roughened; but some are smoothed nearer the lip; decorations confined to 6 lips (tool, cws, single cords) and 5 rim/bodies with shallow, vertical finger trailing; synonymy, Spring Hollow Cord-marked (Logan 1976; Benn 1978), Held Cord Roughened (Benn ed. 1981); Figures B.8-10.

Madrid Plain: same forms as Madrid CR; surfaces are plain (smoothed over); decorations confined to 4 with cws stamps on lips and one channeled rim; synonymy, Spring Hollow Plain (Logan 1976); Figure B.12.

Madrid Punctated: variable coarse and fine pastes in these vessels; half of the rims are flaring; most are cordmarked on the exterior; lip and rim decorations are rare; all rims have a row of small punctates set well below (ave. 17.6mm) below the lip; synonymy, Denison Punctated (Benn n.d.); Figure B.13.

Madrid Stamped: most rims are slightly curved and vertically oriented; surfaces are plain (smoothed over); lip and rim decorations are rare and when present match the exterior; exterior upper and lower rim decorations are mostly cws stamps in rows, columns or geometric patterns in zones; individual dentate teeth are petite (2.5x1.4mm); only 2/11 rims are embossed; synonymy, Held Stamped (Benn n.d.), Lake Benton Dentate and Cordwrapped Stick (Anfinson et al 1979; Benn 1982), Levsen Stamped (Logan 1976; Benn 1978); Figure B.14.

Trailed variety: one vessel like Madrid Stamped has broad, shallow trailed lines in place of stamps; synonymy, Fox Lake trailed (late) (Benn 1982); Figure B.14.

CORD ROUGHENED
(late Late Woodland type)

Paste: coarse silts and clays with small amounts of sand inclusions; tempered with moderate amounts of coarse (.5-4mm) crushed igneous rock; moderately coarse textured, massive to fine blocky paste; sherds hard (3 Mohs scale) and dense.

Color: both surfaces brown (7.5YR5/4) to dark brown (7.5YR3/2) and some darker firing clouds; cores slightly reduced surface colors.

Surface Treatment: interiors wiped smooth and even; exteriors covered with vertically oriented fine, dense cord impressions (cord-wrapped paddle), sometimes slightly smoothed.

Method of Manufacture: probably building and thinning with paddle and anvil.

Form: squat, wide shouldered sub-conoidal bodies with broadly expanding shoulders, constricted necks, and sharply bent rims that are vertical or slightly flaring; rims thinned and lips rounded.

Decoration: few tool stamps confined to extreme upper rim and lip.

Synonymy: Madison Plain in northeastern Iowa (Baerreis 1953; Benn 1978); Feye Cord Roughened in the Missouri River Basin (Dakotas) (Kivett 1952; Benn n.d.); Lake Benton Cordmarked in southern Minnesota (Benn 1982).

Figures B.15, B.16. Table B.3

Variant: some small rims appear to be bowl forms (Figure B.17), which would qualify as another type.

CORD IMPRESSED
(late Late Woodland type)

Paste: fine silty paste; tempered with moderate amounts of coarse (.5-4mm) crushed igneous rock; relatively fine textured; fine blocky to laminated structure.

Color interiors dark brown (7.5YR3/2) to reddish brown (5YR4/4); exteriors mostly very dark gray (7.5YR3/0) to dark brown (7.5YR4/2) and some yellowish red (5YR5/6); cores slightly reduced surface colors; firing clouds evident.

Surface Treatment: interiors smoothed and even; exteriors mostly smoothed on the rim with fine, even cord roughening on the bodies and shoulders.

Method of Manufacture: probably building and thinning with paddle and anvil.

Form: probably sub-conoidal bodies with expanding shoulders and curved rims; thinned rims are vertical or flaring; lips carefully smoothed and usually rounded (occasionally squared).

Decoration: one rim with interior upper rim cord impression; 5 rims with tooled lip impressions; half of rims with vertical or oblique upper exterior rim decoration; central rim decoration usually horizontal cord impressions (evenly-spaced) with additions of oblique cords, pendant cords, etc.; decorations confined to area above the shoulder/rim juncture.

Synonymy: Madison Cord/Fabric Impressed in northeast Iowa (Baerreis 1953; Hurley 1975; Benn 1978); Minotts Cord Impressed in eastern Iowa (Logan 1976); Loseke ware in the Missouri River basin (Kivett 1952; Benn n.d.).

Figure B.15

Table B.3

SAYLOR WARE
(late Late Woodland period)

Paste: fine silty paste; tempered with moderate amounts of coarse (.5-4mm) crushed igneous rock and occasional flecks of hematite; moderately coarse textured, massive to blocky structure; sherds relatively hard (2-3 Mohs scale) with chalky surface feel and dense walls.

Color: surfaces dark reddish gray (5YR4/2) to dark gray (7.5YR4/0) to reddish brown (5YR5/4); cores reduced surface colors; firing clouds evident.

Surface Treatment: interior and exterior rim and shoulder smoothed and tooled even while damp; flat, even cord roughening on exterior bodies.

Method of Manufacture: probably building and thinning with paddle and anvil.

Form: sub-globular bodies (probable) with wide shoulders, high curved rims, and smoothed slightly squared lips; (all curves of vessels are evenly, not abruptly, curved); rims tend to be flaring and are castellated with (probable) squared orifices.

Decoration: 3 of 8 lips decorated with tool or cord impressions; exterior rims with nested chevron composed of evenly spaced, bold cords impressed deeply in soft paste; 2 rims have thickened and notched castellations; 2 rims are not decorated.

Synonymy: some Minotts Cord Impressed rims have castellations (Logan 1976; Benn 1980); Maples Mills pottery in Illinois (Riggle 1981); see Thies 1978.

Figures B.18, B.19

Table B.3

GREAT OASIS HIGH RIM

Paste: fine silty pastes with few sand inclusions; tempered with moderate amounts of medium (.5-2mm) crushed igneous rock; massive to slightly blocky structure; walls dense and hard (3-4 Mohs scale).

Color: interiors very dark gray (10YR3/1) to pale brown (10YR6/3); exteriors gray brown (10YR5/2) to pink (7.5YR7/4) to red (2.5YR5/8); cores reduced surface colors; firing clouds common on exterior, some soot patches present.

Surface Treatment: interiors evenly smoothed while damp, then often tool smoothed with tool shaping at rim/shoulder juncture; exteriors (rim/shoulder) horizontally smoothed and tooled (some with dull polish); fine even cord roughening common below shoulder.

Method of Manufacture: probably building and thinning with paddle and anvil.

Form: globular bodies with broadly expanding shoulders (ave. 116° from vertical), sharp rim/shoulder juncture, straight slightly thinned rims, and tool squared lip which is extruded often.

Decoration: none

Synonymy: Wilford 1945; Henning and Henning 1978.

Variant:

notched lip: many rims are similar to Great Oasis High Rim but have less parallel rim surfaces, sloppily extruded lips, slightly rounder rim/shoulder junctures, and more gently expanding shoulders; patches of cord roughening still appear on the exterior rim surface; the interior or exterior lip edge is tool impressed.

Figures B.20, B.21

Table B.4

ONEOTA POTTERY
(Moingona phase)

Paste: coarse silts and clays; tempered with generous amounts of crushed shell (.5-2mm), up to 50% of body sherds at Clarkson with hematite flecks (Osborn 1982); fine textured, laminated structure; dense and compact walls but soft and silty to touch (2.5-3 Moh's scale).

Color: exterior surfaces very dark gray (10YR3/1) to light yellowish brown (10YR6/4); interiors surfaces slightly darker gray; cores same as surfaces; firing clouds common.

Surface Treatment: interiors smooth and even but often retain scratches and wiping marks in soft paste; interior walls often displaced by exterior decorations; exterior surfaces were made even by paddling with a cor-wrapped paddle, then were carefully smoothed (only a few vessels retained cord impressions); some vessels were smoothed while leather hard resulting in a faintly polished surface.

Method of Manufacture: no coil breaks are present; mass modeled in sections which were joined to form hemisphers and a rim, and these in turn were joined to form the vessel.

Form: globular vessels with vertical to flaring rims, abrupt rim/shoulder junctures, rounded shoulders and squat body forms; small vessels have steep shoulders while large vessels have broadly expanding shoulders; miniature and pinch-pot vessels also present; vessels diameters (excluding miniatures) range from 10-40cm; thickest walls occur at the rim-shoulder juncture, otherwise body walls are extraordinarily thin (ave. 4.2mm at Christenson); undecorated loop handles as common as decorated strap handles; lugs/buttress handles (Osborn 1982) less common; lips are round; rims usually vertical to flaring with interior rim/shoulder juncture angle averaging 112.2° (Christenson site); a small number of bowls are present at the Clarkson site.

Decorations: almost all decorations were applied with a wide, blunt tool in soft paste, while a few were done with a narrow, blunt tool; interior rim decoration occurs on about 10% of the rims and consists of nested chevrons or oblique parallel lines; about 36% of the lips are decorated with tool impressions on the interior side (most common) or on the lip crest; lip notches may be grouped relative to interior rim and/or exterior shoulder motifs; exterior shoulder decorations are divided into panels by nearly vertical bands of parallel lines; in the panels are chevrons and pendants composed of parallel lines with fringes of dots (punctates) or short lines; dots and concentric circles ("bullseyes") often appear with the motifs; chevrons and pendants alternate in even numbers on the vessel and are balanced with pairs of handles and groups of lip notches.

Synonymy: Moingona phase pottery (Gradwohl 1974:95; Osborn 1982), Burlington-Moingona (Tiffany 1979), Christenson pottery (Benn 1984).

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B15

TABL

Ceramic A

Saylorvill

McBride & Hig

type	morphology lip	morphology rim	morphology rim orient.	morphology shoulder	surface treatment lip	surface treatment rim	surface treatment body	size m.m. lip	size m.m. rim wall	size m.m. body wall	size m.m. orifice dia.	size m.m. max. body dia.	interior decoration type	interior decoration size
McBride Trailed n=13 BN1-2 [illegible]39,175, 151,159,111	2R-F 7R 1pt 1groove	10str 1sl cur	5in 5vert 1flar	8ste	9pl 2cr	9cr 1ob.cr. 1dec/cr	8cr 1ob.cr.	n=11 $\bar{x}$=5.9 s=1.9	11 7.1 1.3	8 8.6 1.6	10 181 39.3	7 215.7 48.6	10 none tool	 8.4x3.2
High Bridge Constricted n=6 BN162,121 PB111	2F 2R-F (1 beveled) (1 extruded)	2str 3cur	1in 2flar	5ste	4pl	4cr 1socr	3cr	n=4 $\bar{x}$=6.8	5 8.7	2 7.5	2 226	2 225	3 none 1cwss	 21.3x3.2
Hopewell Cross-Hatched rim n=1 BN262	F	sl cur	vert	–	pl	pl	–	4.8	7.7	–	210	–	none	
High Bridge Cord Roughened n=36 BN121,38, 29-30,262,103, 125,162,168, 181,182 PB111,151	6F 12R-F 16R	13str 20sl cur 3cur	23in 12vert	6ste 4mod ste	27pl 3socr 5cr	29cr 1hor cr 6socr	9cr 2socr	n=35 $\bar{x}$=7.9 s=1.6	36 8.8 1.2	5 8.2 2.0	21 196.2 43.9	1 300	25 none 7obl cws 3obl den 1 tool	 $\bar{x}$=25x6.1 $\bar{x}$=27.9x2 11.4x7.4
High Bridge Trailed n=10 PB175 BN125,30,38, 121,123,182, 2[illegible]	6F 4R	8str 2sl cur	4in 6vert	4ste 2mod ste	8pl 1cr 1socr	6cr 1cr/pl 2decor 2br	5cr 1decor	n=10 $\bar{x}$=7.7 s=2.2	10 8.7 1.1	3 8.3	8 195 34.6	2 235	8 none cwss	 $\bar{x}$=26x6.6
High Bridge Stamped n=16 BN125,27, 29-30,38,121, 181,182,262	6F 5R-F 5R (2 bevel)	10str 2sl cur 4cur	6in 7vert 3flar	6ste 1mod ste	11pl 2socr 3cr	8pl 2socr 2cr 1horiz cr 3br	1pl 1cr 1horiz cr 2br	n=16 $\bar{x}$=7.7 s=1.9	16 9.1 1.3	5 8.4	13 201.5 34.6	4 257.5	6 none 8cwss 2den	 21x6.2 26.1x5.6

F-flat; R-round; P-pointed; st[illegible]
vert-vertical; flar-flaring; sl [illegible]
exp-expanding; pl-plain; socr-[illegible]
roughened; cws-cord-wrapped [illegible]
obl-oblique; hor-horizontal, [illegible]

1[illegible]2

[illegible]BLE B.1

Attributes

[illegible]lle Project

[illegible]igh Bridge Wares

	lip decoration		upper rim decoration		lower rim/body decor.			Bosses/punctates			[illegible]	cord
	type	size	type	size	type	size	dist. apart	(dia) size	dist. apart	dist. from lip	trailed line width	
[illegible]	5 none groove net [illegible] punctate	 1.7 7.8x2.0 3.[illegible]	7 paral. lines 1 zoned lines 1 short lines 1 none		4 paral. lines 1 zoned lines 1 column. lines 1 x-hatch lines 1 lines and pendant		$\bar{x}$=4.[illegible]	93 $\bar{x}$=7.[illegible] s=1.[illegible] 1P 4.[illegible]	 7.4 6.[illegible] 10.[illegible]	 8.[illegible] 3.6 12.7	n=11 $\bar{x}$=2.[illegible] s=.[illegible]	13
[illegible]3.2	2 none 2cwss	 16.6x3.5	1 none		6 punctate column <-----4 punctate column	 x 4.2	 4.0	38 $\bar{x}$=2.5	 11.1	 12.[illegible]	n=1 [illegible].4	[illegible]
	none		x-hatch zone	22.6	1 punctate	3.7	1.9	none			1.1	channel 21 mm wide 2.5 deep
x6.1 [illegible]x2.3 [illegible].4	53 none 1punctate 2finger nail	 3.1 8.1x1.6	36 none		10 none			33B n=28 $\bar{x}$=10.9 s=2.7 1P 3.3	 23 7.7 4.0 –	 33 16.8 6.4 25.2	den. teeth 2.5x[illegible]	26S 22
[illegible]	6 none 2cwss 2tool	 [illegible] 11x6 4.8x3.5	1 none cwss punctate 7 paral. lines	 $\bar{x}$=12.4x8 3.9	9 paral. lines		n=6 $\bar{x}$=4.3	10B $\bar{x}$=9.7 s=1.3	 6.0 4.0	 14.4 7.6	line width n=10 $\bar{x}$=2.0 s=.6	5S 12
[illegible]7 [illegible]	14 none 1den. tool	 7.6x4 __x7.7	3 none 8cwss 5 den	 16.5x4 23.8x2.1	[illegible] none 2 column cwss 2 zoned den. 1 den row 1 [illegible] row			1 none 12[illegible] $\bar{x}$=10.4 s=2.1 [illegible] 4	 6.0 2.0 8.[illegible]	 15.[illegible] 3.0 [illegible]	line width n=3 $\bar{x}$=[illegible] dentate teeth n=7 [illegible] [illegible]x2.6	[illegible]

[illegible] straight; sl-slightly; cur-curved; [illegible] sharply; [illegible] moderately; [illegible]; [illegible] dentate; [illegible]

TABLE B.2

Ceramic Attributes
Sayreville Project
High Bridge & Madrid Wares

type	morphology: lip	morphology: rim	morphology: rim orient.	morphology: shoulder	[illegible]: lip	[illegible]: rim	[illegible]: body	size (cm): n	size (cm): width rim	size (cm): body	size (cm): orifice dia.	base dia.	interior decoration	lip decor
High Bridge Plain n 16 [illegible],80,88, 103,1[illegible]3,181, 1[illegible],121	4F 48 P 3R 1P (3 ex- cluded)	7str [illegible]sl cur	7in 9vert	3ste	14pl 1scr 1cr	13pl [illegible]	2pl 1[illegible]	n 16 x 6.3 s 1.7	16 3.4 1.6	1 10.4	10 193 56.8	-	11 none 4cw[illegible] 23.6x6.8 [illegible]den [illegible]	16 [illegible]
High Bridge [illegible] [illegible],121,	[illegible]	3sl cur	2in 1 vert	-	1pl 2[illegible]	2br [illegible]/scr	[illegible]	n 3 x 6.1	3 8.4		1 310	-	3 none	3 [illegible]
[illegible]	[illegible]	str	vert	ste	pl	[illegible]	[illegible]	[illegible]	6.5	[illegible]	170	-	obl [illegible] cwss	non[illegible]
Madrid [illegible] [illegible] 161,[illegible]	2F [illegible] 15R	10str [illegible] cur 1 [illegible]	2in 1 vert 5flar	2[illegible] ste 3sl exp	22pl 1cr	16pl 5scr 1cr	4pl 18cr 1cr	n=23 x [illegible] s [illegible]	2[illegible] 6.7 1.0	4 6.4	15 185.3 59.4	1 160	22 none [illegible] 17.[illegible]x1.2 dent cw[illegible]	22 [illegible] cwss [illegible]
[illegible] [illegible],7,[illegible], [illegible],[illegible],190, [illegible]	1[illegible] 2R [illegible] [illegible]	[illegible] [illegible] [illegible] [illegible]	[illegible]vert 14 flar	1ste 3sl exp 2exp	19pl	17pl 2scr	1pl 18cr 1cr	n 18 x [illegible] s [illegible]	1[illegible] 6.6 [illegible]	2 8.3	14 167.0 54.8	2 2[illegible] -	1[illegible] none	15 n[illegible] 4 cwss 8
[illegible] [illegible] 1[illegible]9, [illegible]	1[illegible] [illegible]	1str [illegible]sl cur [illegible]	2in [illegible] 5flar	2sl exp	7pl [illegible] 1[illegible]	7pl [illegible] [illegible]	1p[illegible] 2cr	n 10 x [illegible] s [illegible].9	10 6.[illegible] 1.0	1 6.7 -	7 195.7 77.4	1 160	10 none	8 n[illegible] 1cwss 1 1[illegible]

F=flat; [illegible] round; P pointed; str straight; sl sl[illegible] vert= vertical; flar=flaring; sh sharply; ste st[illegible] exp=expanding; pl=plain; [illegible] [illegible] [illegible] roughened; cw [illegible] cord-wrapped stick stamped; h[illegible] obl [illegible] oblique; ho[illegible] horizontal, [illegible] cord; [illegible] pres[illegible]

1[illegible]2

[illegible] 6.2

[illegible] Attributes
[illegible] Project
[illegible] Madrid Wares

Interior decoration	Lip decoration	Upper rim decoration	Lower rim body decoration	Base/pontil dia. / width / length	Miscellaneous	Record
[illegible]	16 [illegible]	16 none	6 none	2 none 1 [illegible] 126 x̄=10.5 5.? [illegible] s 1.2 3.6 6.8	Dentate teeth [illegible]	25
[illegible]	[illegible]	3 none	1 none	38 s 1 1 3 x̄ 20.8 5.5 19.[illegible]		15
[illegible]	[illegible]		parall. lines (width) 10.6	8 9.[illegible] 5.[illegible] [illegible]	[illegible]	8
[illegible] 19.x1.[illegible]	22 none cws 7.2x6.?	2 none 19cwss 14.6x4.8 Rool 19x3.3 Iden 10.5x2.?	4 none [illegible] [illegible] 3.9 [illegible] 4.4 [illegible] 1.8 [illegible]	11 none 26 x [illegible] [illegible]	Dentate teeth n=3 [illegible]	10
[illegible]	15 none 6 cws ?.3x5.9	19 none	5 none	14 none	[illegible]	[illegible]
10 none	8 none 1cws [illegible] [illegible]	9 none 1 ol 1 wd	1 none	15? x̄ 4.2 9.0 ?.6 s 1.a 5.0 5.0		[illegible]

[illegible] ; [illegible] ; [illegible] ;
[illegible] ; [illegible] ; [illegible] moderately;
[illegible] ; [illegible] ;
[illegible] ; [illegible] ; [illegible] dentate;
[illegible] depression.

TABLE B.3

Ceramic Attributes
Saylorville Project
Madrid ... Late Woodland

type	morphology: lip	rim	rim orient.	shoulder angl	surfaces: lip	rim	[illegible]	size (mm): lip	[illegible]	body	orifice diam	[illegible]	[illegible]	n... type
Madrid Cord Roughened n=43 [illegible] 27, 30, 12[illegible], [illegible], 130, 162, 163 [illegible] [illegible] 164, 165, 251	12r 5R-F 26R	5str 11sl cur 20 [illegible]	1in 3vert 11flar	16exp	22pl 3[illegible] 17cr	1p[illegible] [illegible] [illegible] 1cr	[illegible]	n=[illegible] x̄ 5.6 s=[illegible]	[illegible]1 [illegible].4 1.1	1 9 –	28 253.2 44.6	–	–	42 Iowa[illegible]
(Late Woodland) cord roughened n=11 [illegible] 21, 1[illegible], 114, 163, 125 [illegible] 165	2F 2R-F 6R 2F	[illegible] 4sl cur [illegible] ([illegible])	2vert 9flar	4exp 1sh [illegible] (25.[illegible])	[illegible]	[illegible]	[illegible]	n=11 [illegible] [illegible]	[illegible] 6.[illegible] [illegible]	–	[illegible] 17[illegible] 43.6	–	[illegible]	10
(Late Woodland) Cord Impressed n=16 [illegible] 103, 114, 121, 12[illegible], [illegible] 187 [illegible] 155, 165	2F [illegible] 12R	[illegible]	6vert 6flar	[illegible]sh exp (13[illegible] 95[illegible])	12pl [illegible] 1des	14pl [illegible]r 1[illegible]	1[illegible]	[illegible]	16 [illegible] [illegible]	1 [illegible]	8 1[illegible].8	2 [illegible]	[illegible]	[illegible]
(Late Woodland) Bowl n=3 [illegible]	2R-F 1R	1str 1.1 cut	2vert 1flar	N.A.	3pl	3pl	2pl	n=3 x̄=7.[illegible]	3 7.[illegible]	1 6.[illegible]	2 10[illegible]	N.A.	N.A.	[illegible]
Saylor Cord Impressed n=6 F.165	1R-F 5R (1 extruded)	[illegible] 4sl cur [illegible] ([illegible] castellated)	1vert 5flar	5sh exp (x̄=127°)	6pl	[illegible]pl 1[illegible]r	[illegible] 1[illegible]	n=6 x̄=5.3	[illegible]	3 7.3	[illegible] 126	4 109	[illegible] 62.6	6
Saylor Plain n=2 2F165	F R-F	2sl cur (2/2 castellated)	vert flar	2 sh exp (x̄ 1[illegible]0.5)	2pl	2pl	[illegible]	n=2 [illegible].6	2 [illegible].8	1 [illegible].5	1 160	2 112.5	2 31.6	2

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TABLE B.3

...ramic Attributes

...lerville Project

... & Late Woodland Wares

[illegible]	rim/ [illegible]	rim height	inter. rim decoration type spacing	lip decoration type spacing	upper rim decoration type spacing	mid-lower rim decoration type spacing	cord [illegible] dia.	[illegible]	[illegible]
[illegible]	[illegible]	—	42 none 1[illegible] 5.[illegible]	37 none [illegible] 4.9x4 2[illegible] 6.[illegible] [illegible] 1.9/2.4	5vert,*finger [illegible]	7-7.0wd 13.0apart	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	10 [illegible] den [illegible]	3 [illegible] [illegible] 4.0 tool	[illegible]		dentate [illegible]	[illegible]	
[illegible]	[illegible]	2 [illegible]	14 none 1[illegible] imp 1.6	9 none 1[illegible] 1.[illegible] 2tool 4.0 imp 2.7	x 3[illegible] 3.2 vert [illegible] 7.6 7hor [illegible] 2.5 1[illegible] 3.5 1finger-nail	11hor [illegible] 2. 1zigzag 2pendant [illegible] vert [illegible]	[illegible] 8-1.9 [illegible]	[illegible]	4applied 5 applied 2
	[illegible]	[illegible]	2 none tool 2.3	3 none	3 none	—			
	[illegible]	52.0	6 none	3 none 1tool 2.8 [illegible] imp 4.7	[illegible]	[illegible] 8-3.7	[illegible]	[illegible]	[illegible]
	3 [illegible]	2 31.6	2 none	2 none	2 none				

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TABLE B.4

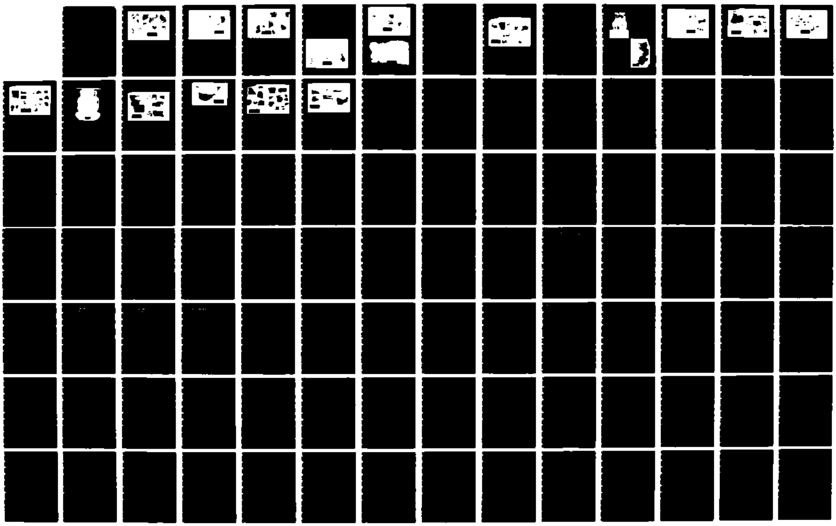
Ceramic Attributes
Saylorville Project
Great Oasis Ware

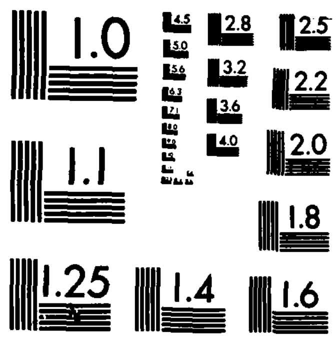
type	morphology				surfaces			size (mm)						inter. rim decoration	lip decoration		rim decoration	cord
	lip	rim	rim orient.	shoulder	lip	rim	body	lip	--walls-- rim	--walls-- body	orifice dia.	rim/sh angle	rim hgts			spacing		
(Great Oasis) Plain Notched Lip n=17 BN114,121, 30,103	7F 2R-F 8R (7 extruded)	8str 8sl cur	17flar	10sh exp ($\bar{x}$=119°)	17pl	12pl 5socr	1socr 1cr	n=17 $\bar{x}$=5.6 s=1.6	16 7.6 1.2	2 5.6 -	9 163.3 44.2	9 93.4 -	10 27.4 7.2	17 none	2c. imp 14tool 1lug	n=16 $\bar{x}$=3.7	17 none	6S
Great Oasis High Rim n=29 BN110,103 114,130	10F 7R-F 12R	14str 15sl cur	29flar	25sh exp ($\bar{x}$=116.7°)	27pl 2socr	24pl 5socr	11pl 5socr	n=26 $\bar{x}$=5.1 s=1.0	26 6.5 1.0	9 4.8 .3	21 181 39.5	16 94.8 5.9	21 31.5 6.8	29 none	29 none		29 none	5S

F-flat; R-round; P-pointed; str-straight; sl-slightly; cur-curved; vert-vertical; flar-flaring; sh-sharply; ste-steeply; mod-moderately; exp-expanding; pl-plain; socr-smoothed-over-cord roughened; cr-cord roughened; cwss-cord-wrapped stick stamped; br-brushed; den-dentate; obl-oblique; hor-horizontal; c-cord; imp-impression

AD-A162 959 INTERPRETIVE OVERVIEW OF CULTURAL RESOURCES IN SAYLORVILLE LAKE IOWA VOLUME 1(U) SOUTHWEST MISSOURI STATE UNIV SPRINGFIELD CENTER FOR ARCHAEOL 3/4

UNCLASSIFIED D W BENN ET AL SEP 85 DACW25-84-C-0035 F/G 5/6 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Figure B.1: McBride ware; lips are at the top of all sherds except three body sherds (lower left); (below) rim profiles of rims shown above.

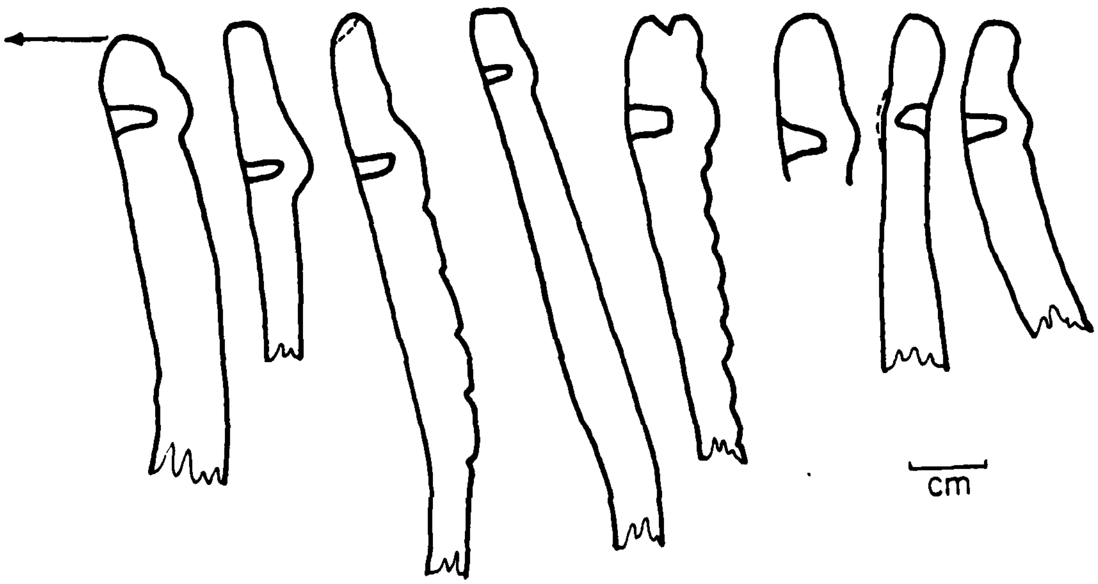
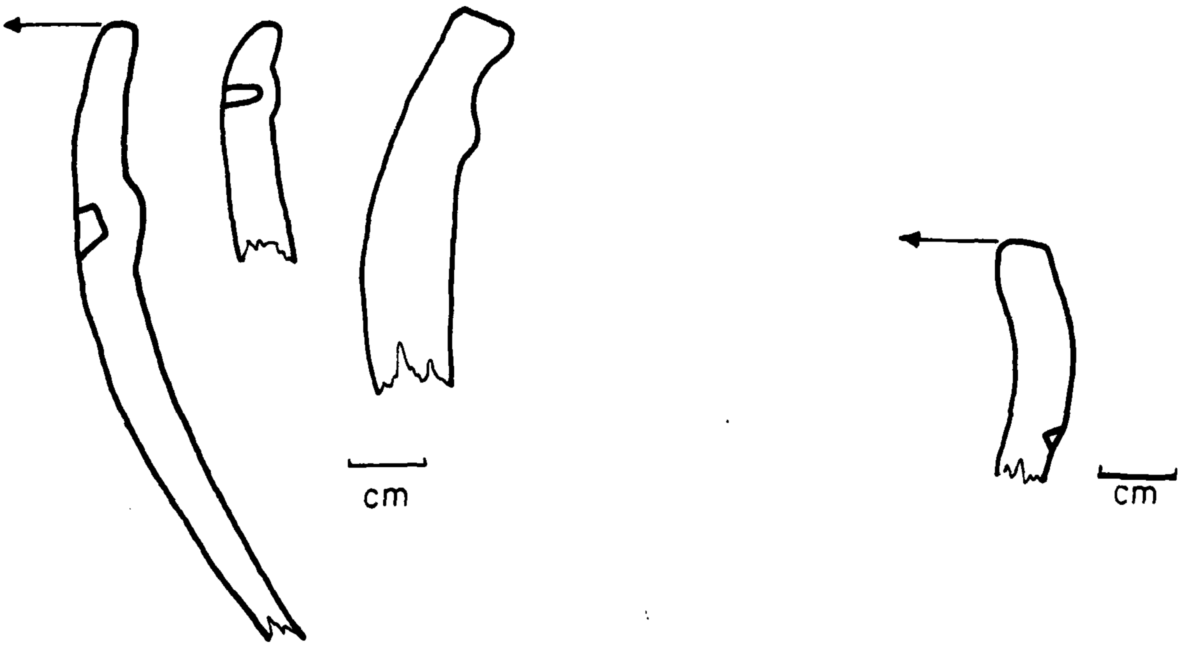


Figure B.2: High Bridge Punctated rims (above, upper row) and body sherds (above, lower two); Hopewell Cross-Hatched rim (above, extreme left); (below left) High Bridge Punctated rim profiles; (below right) Hopewell Cross-Hatched rim profile.



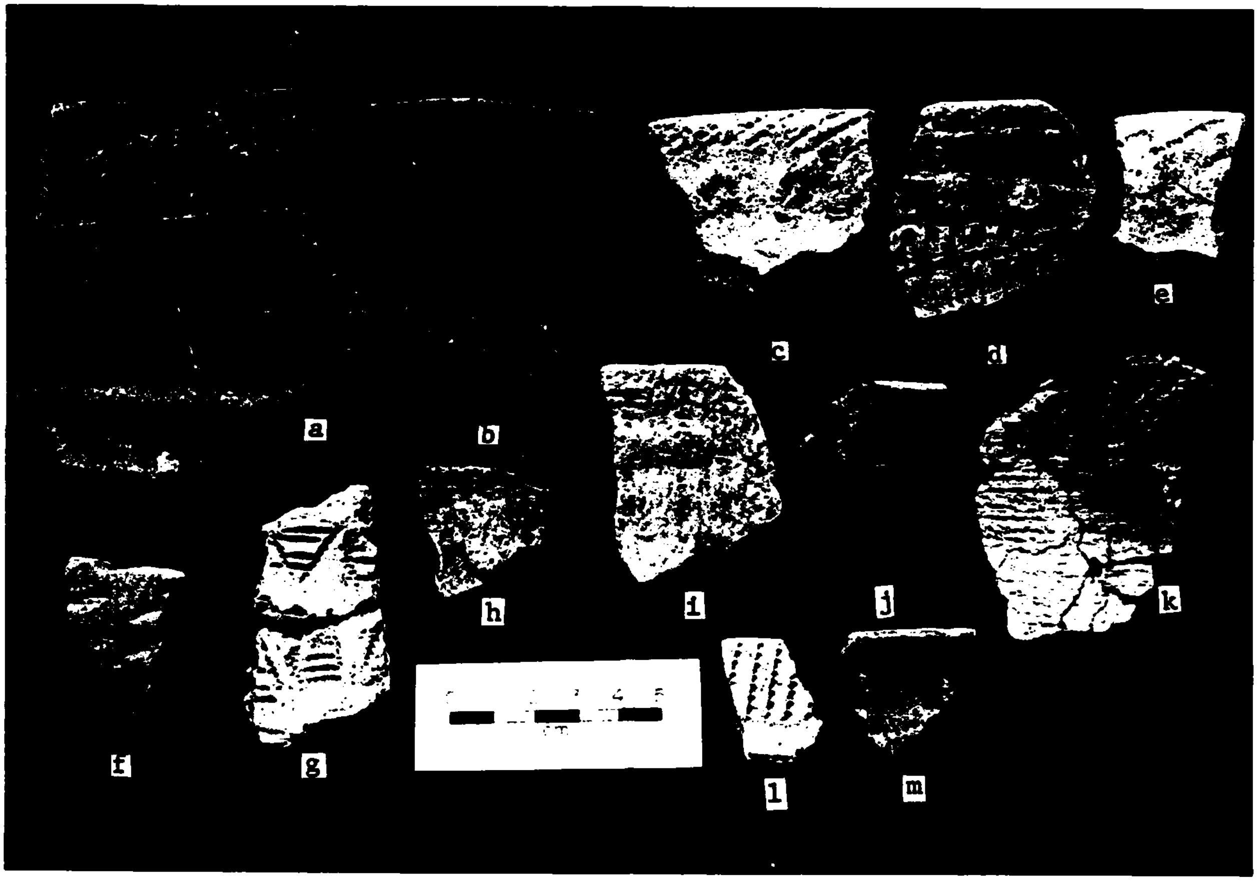
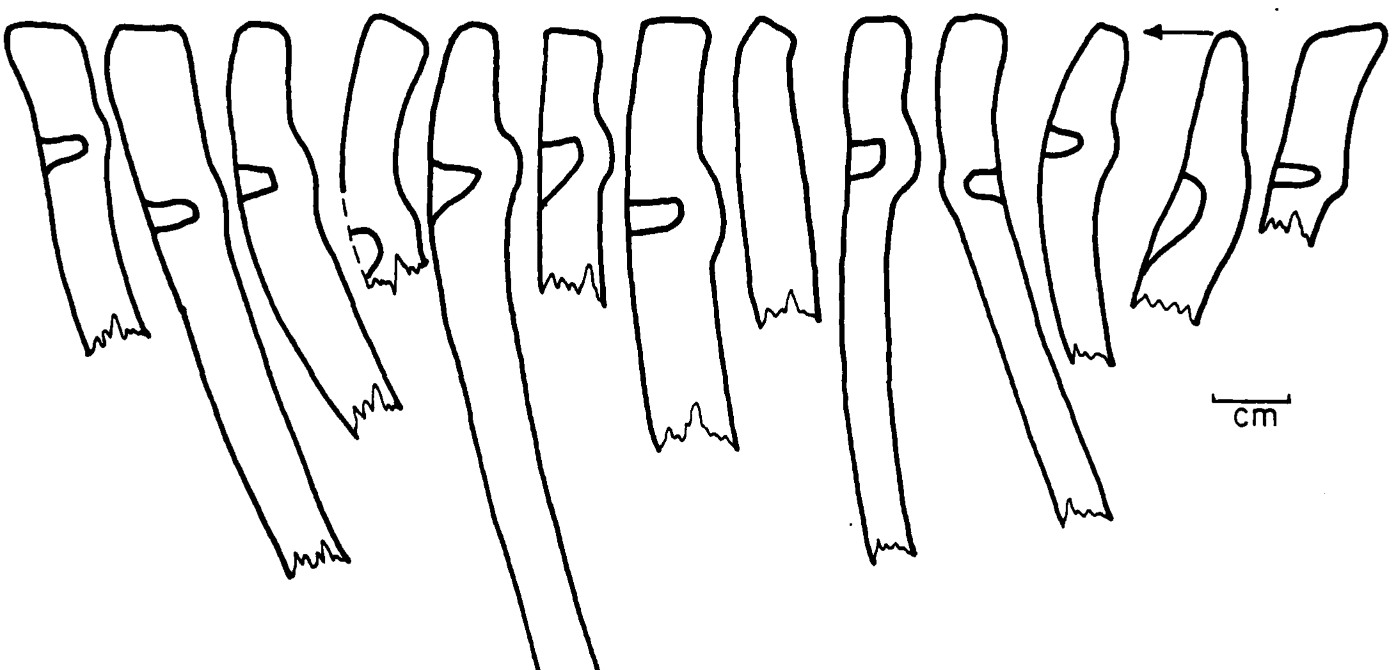


Figure B.3: High Bridge Stamped rims (above); (in order from left to right, upper to lower rows) dentate stamps a,c,d,e,g,l, cord-wrapped stick stamps b,f,h,i, j,k,m; (below) rim profiles for High Bridge Stamped shown above.



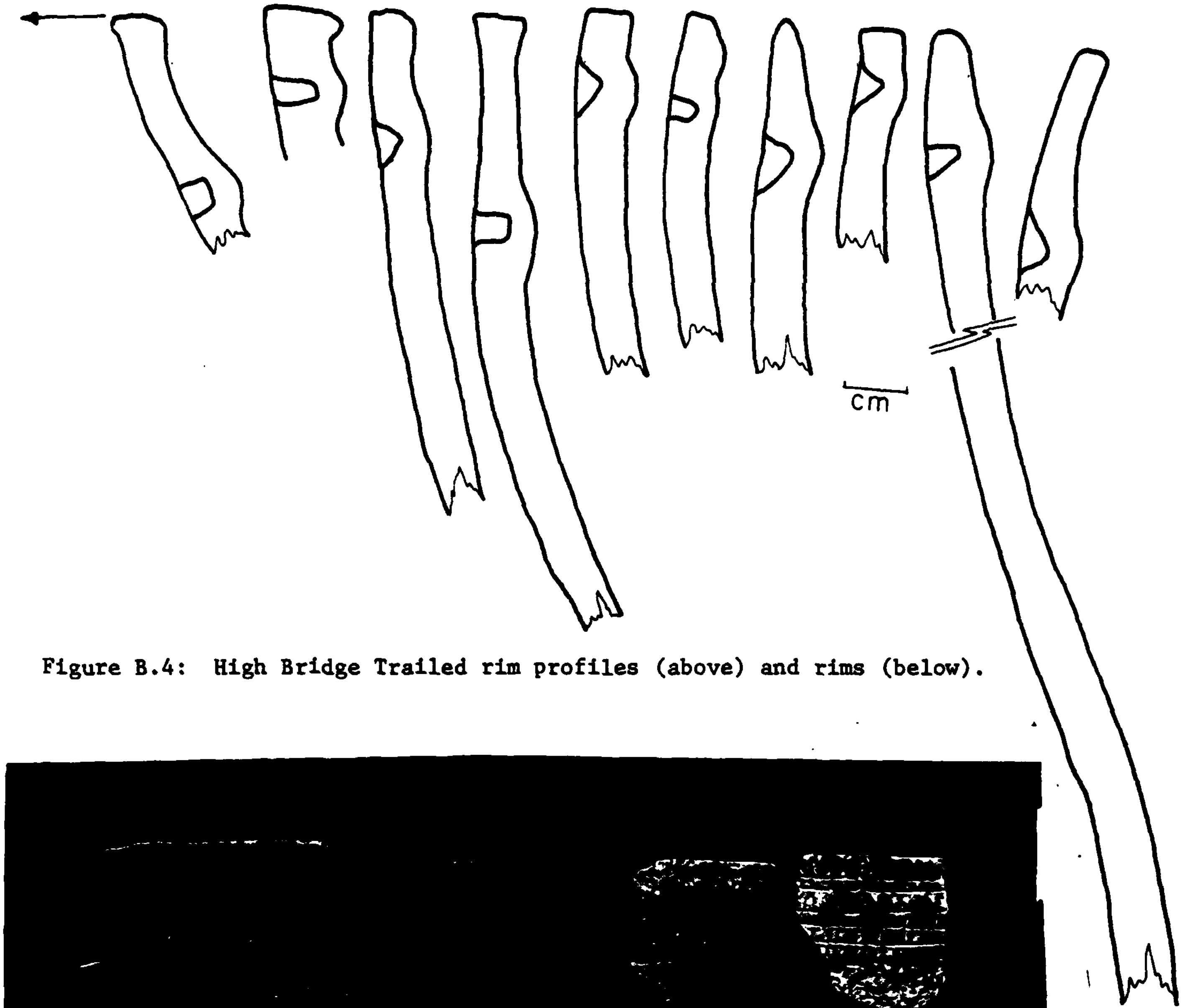
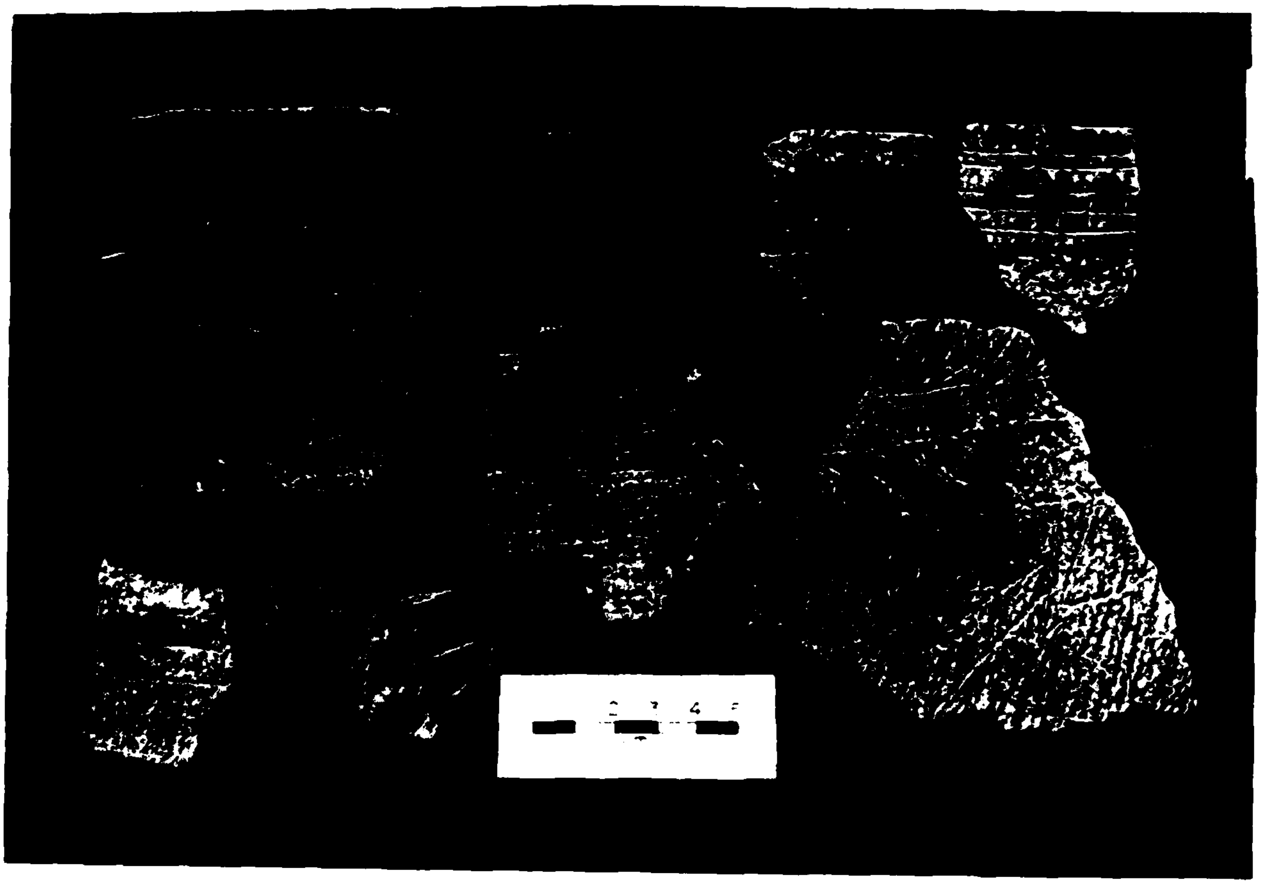


Figure B.4: High Bridge Trailed rim profiles (above) and rims (below).



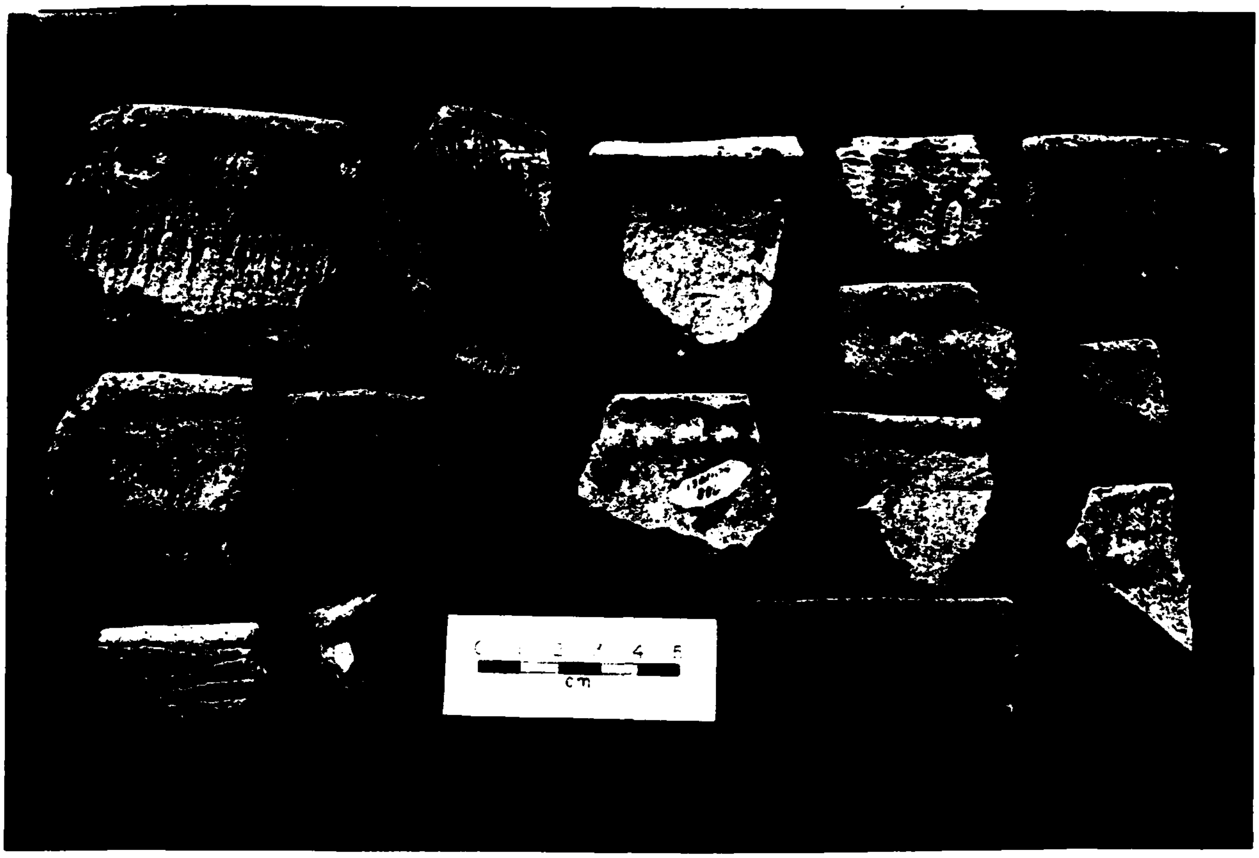


Figure B.5: High Bridge Cord Roughened (a-f); High Bridge Plain (g-m; h is reversed to show interior stamp); High Bridge Brushed (n-o).

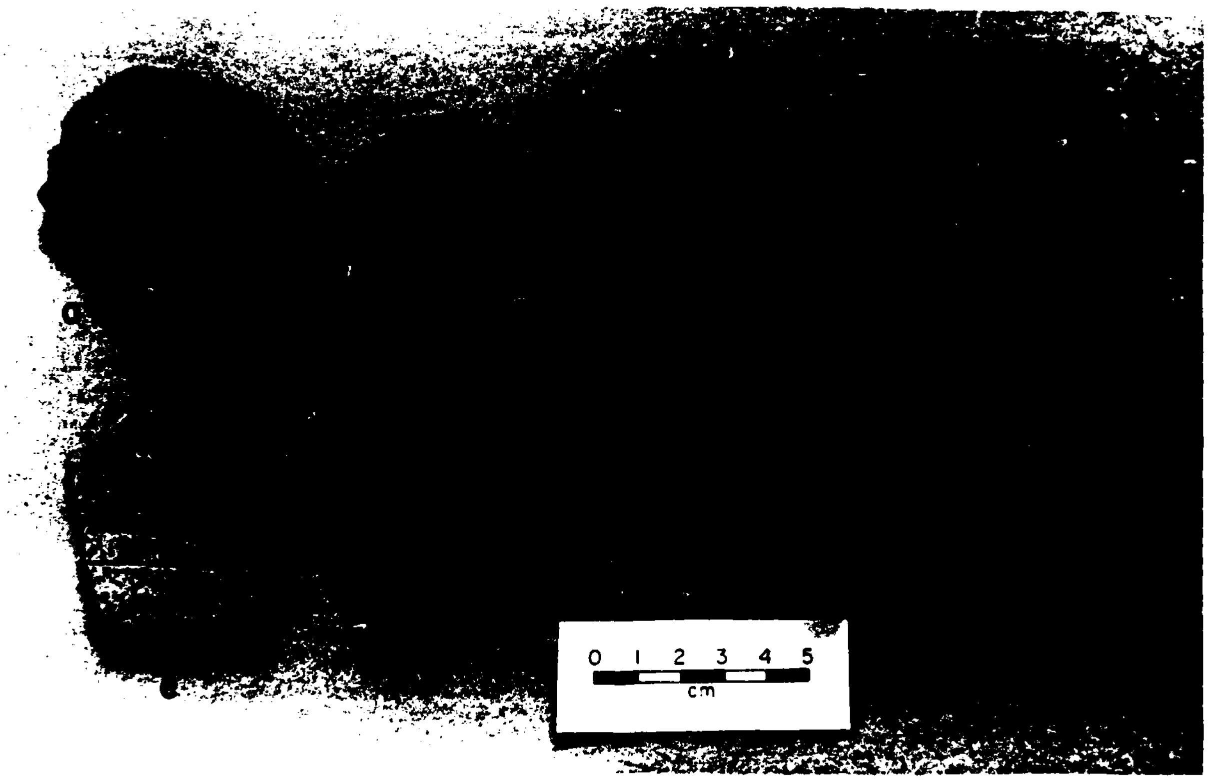


Figure B.6: miscellaneous body sherds: a-c) High Bridge Stamped (a-dentate, b-plain, c-cws); d) trailed (Madrid ware); e) High Bridge Trailed; f) Madrid Punctated; g) Madrid Stamped (dentate); rocker stamped.

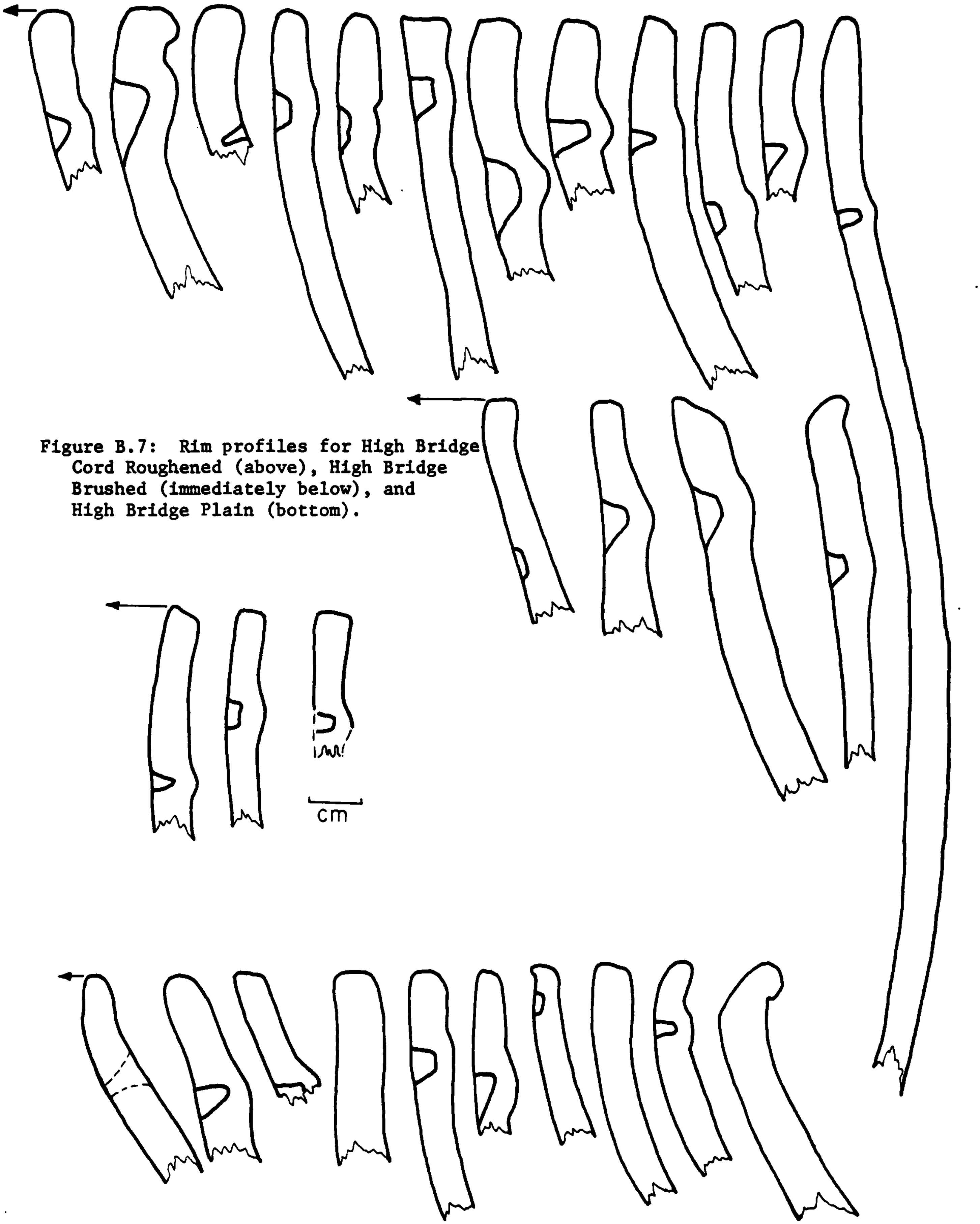


Figure B.7: Rim profiles for High Bridge Cord Roughened (above), High Bridge Brushed (immediately below), and High Bridge Plain (bottom).

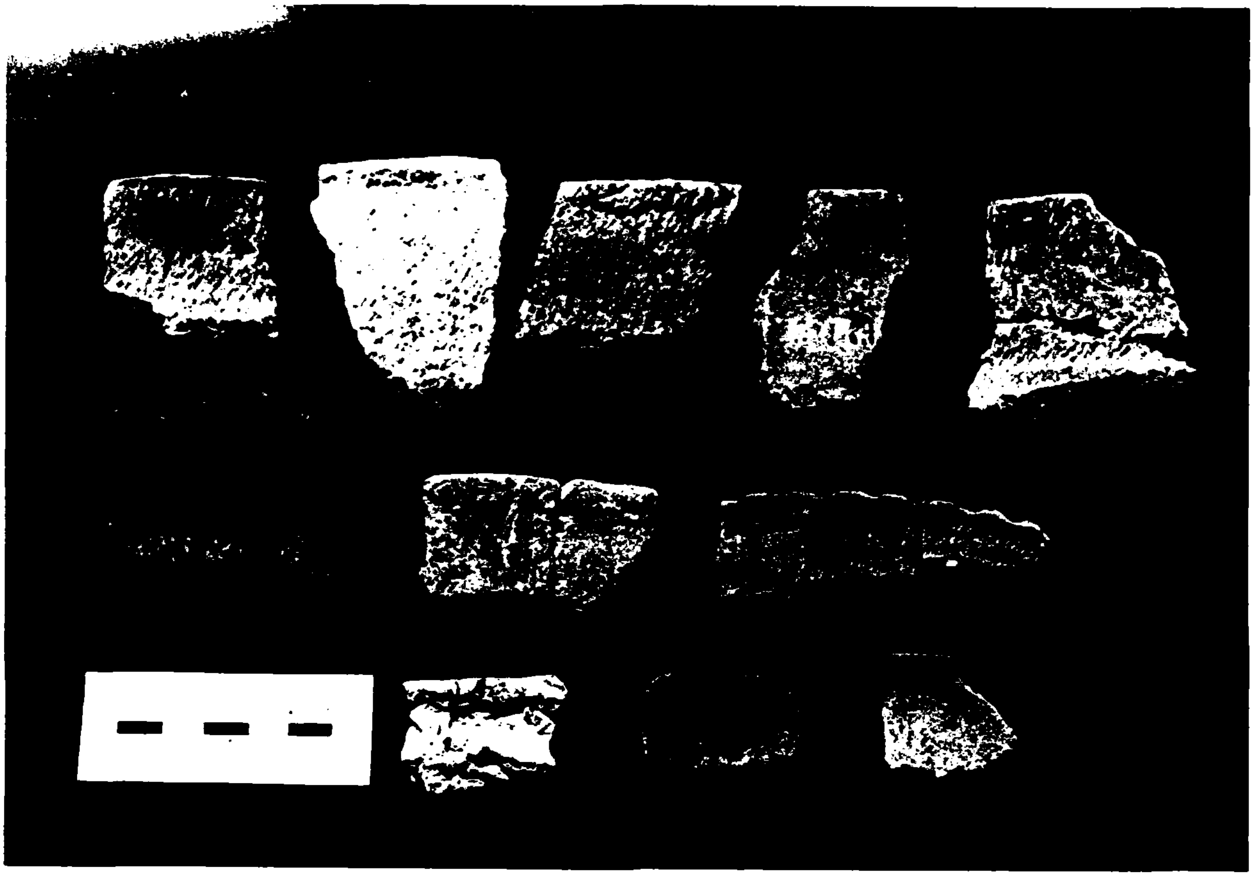


Figure B.8: Madrid Cord Roughened rims.

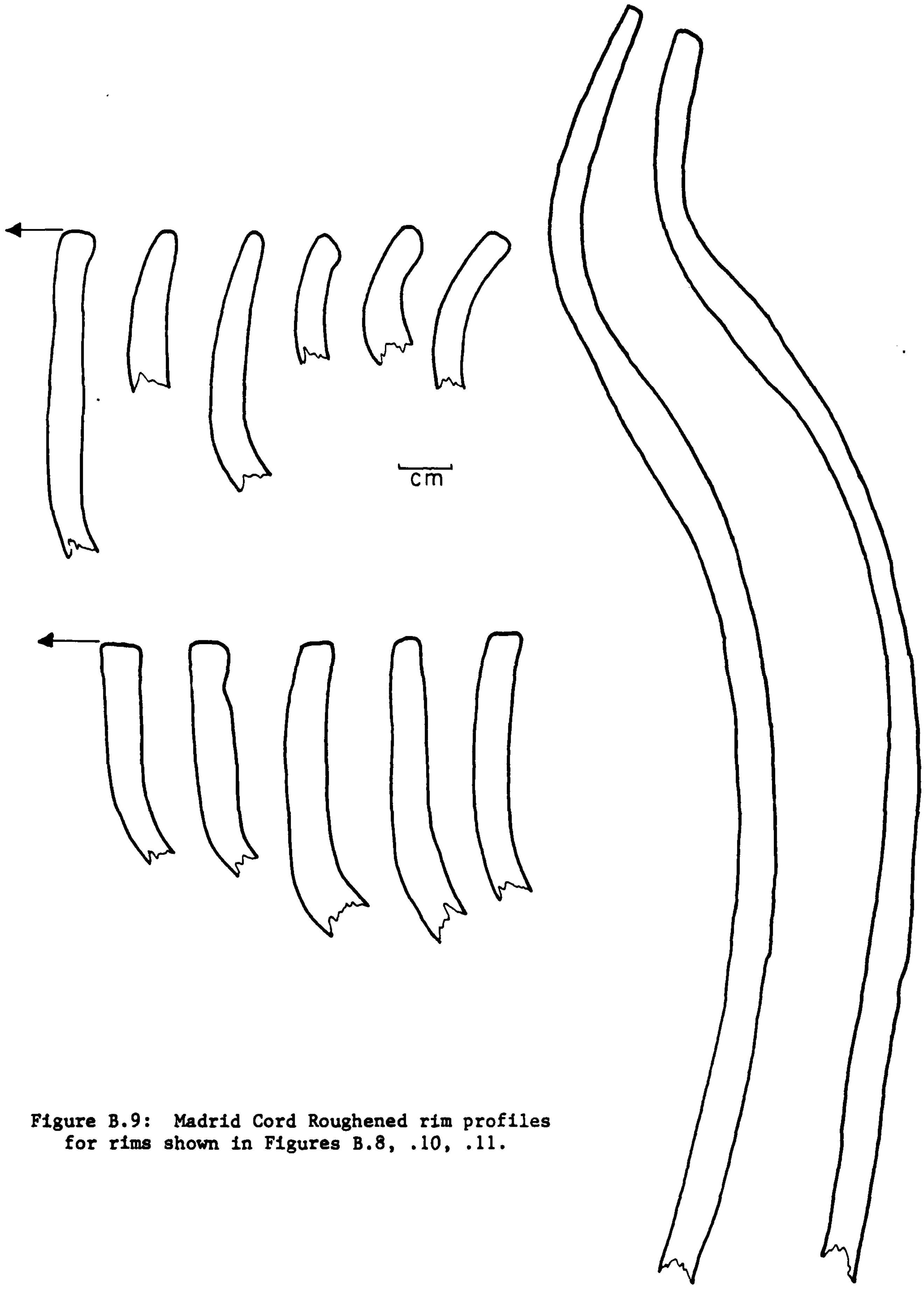


Figure B.9: Madrid Cord Roughened rim profiles for rims shown in Figures B.8, .10, .11.

Figure B.10: Madrid Cord Roughened vessel from 13PK149.

Figure B.11: Madrid Cord Roughened vessel from 13PK149; note vertical finger trai'ing on shoulder.

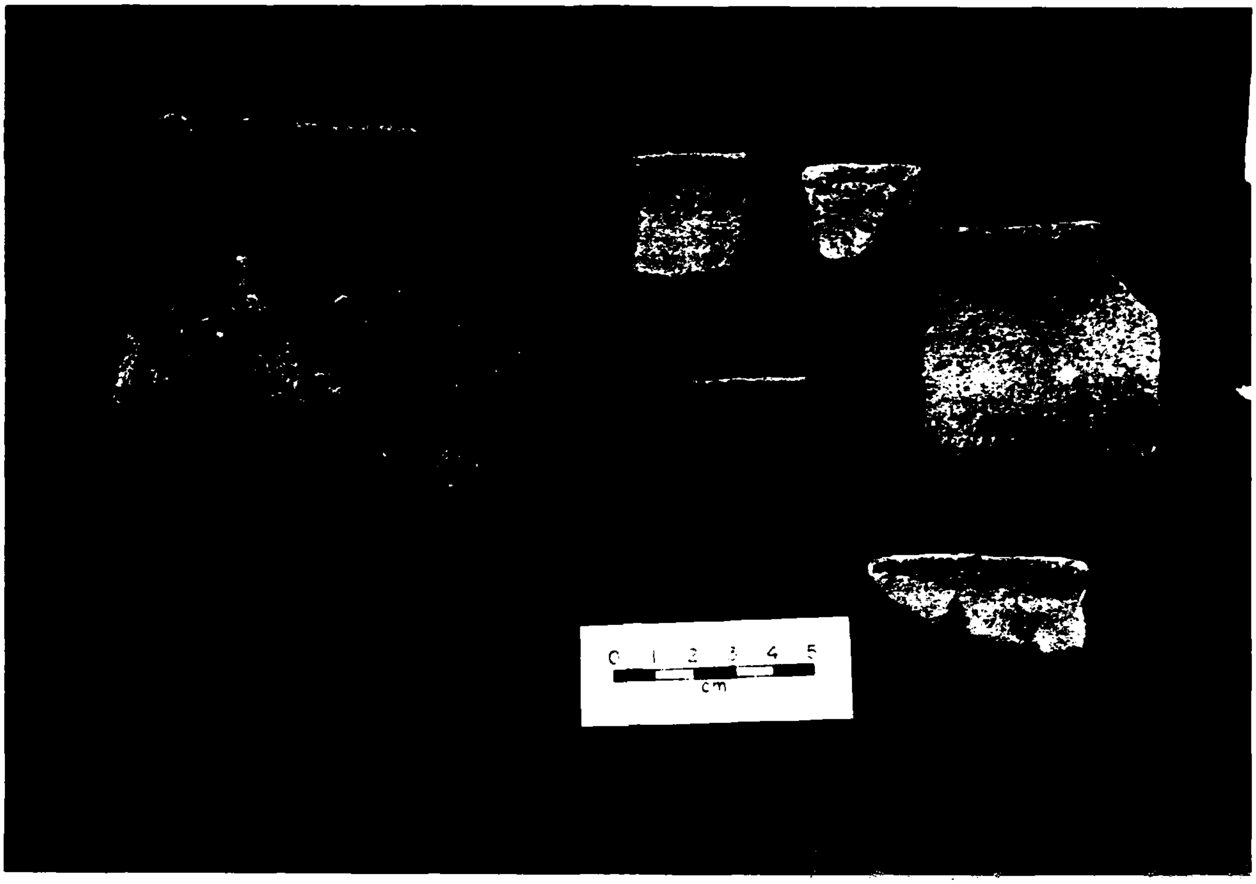
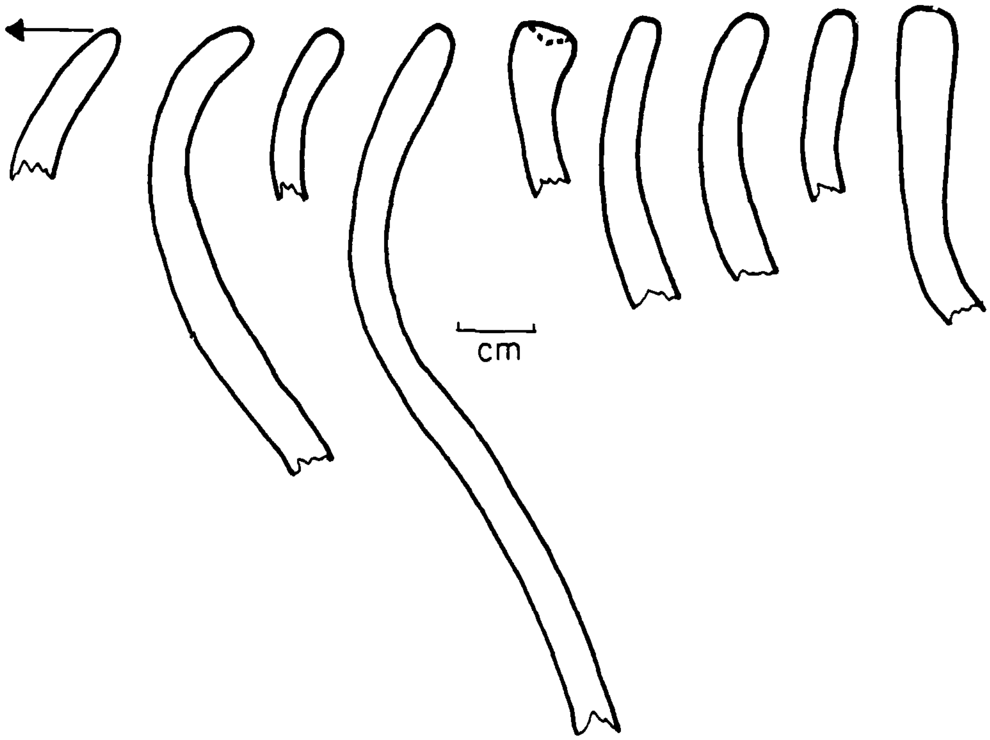


Figure B.12: Madrid Plain rims (above) and rim profiles (below).



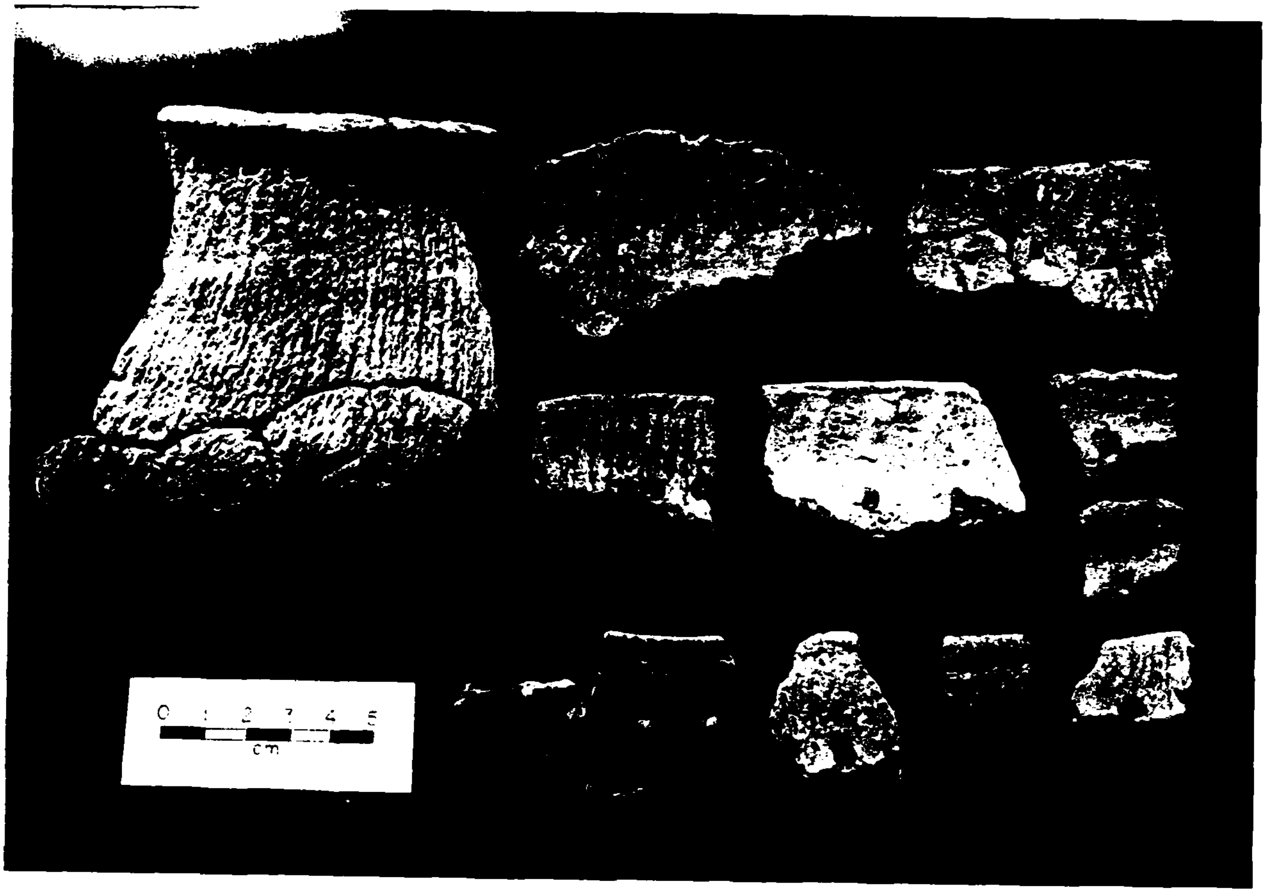


Figure B.13: Madrid Punctated rims (above) and rim profiles (below).

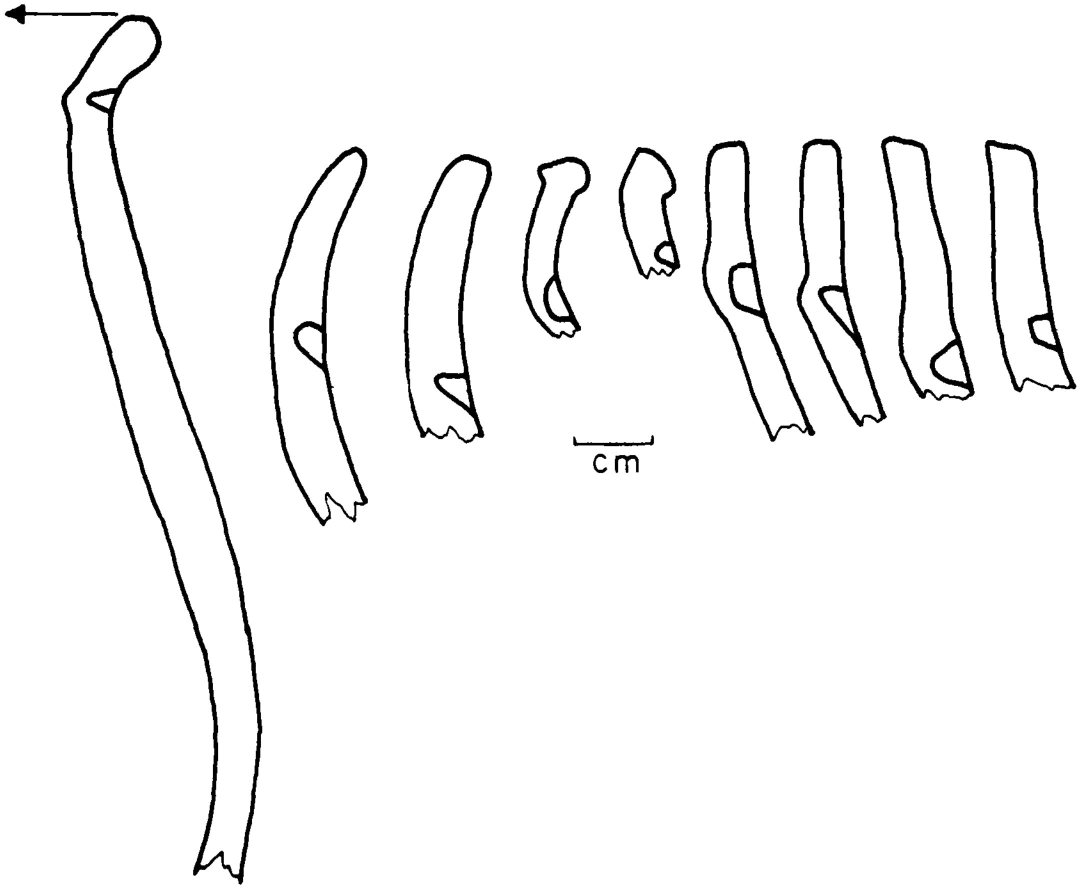
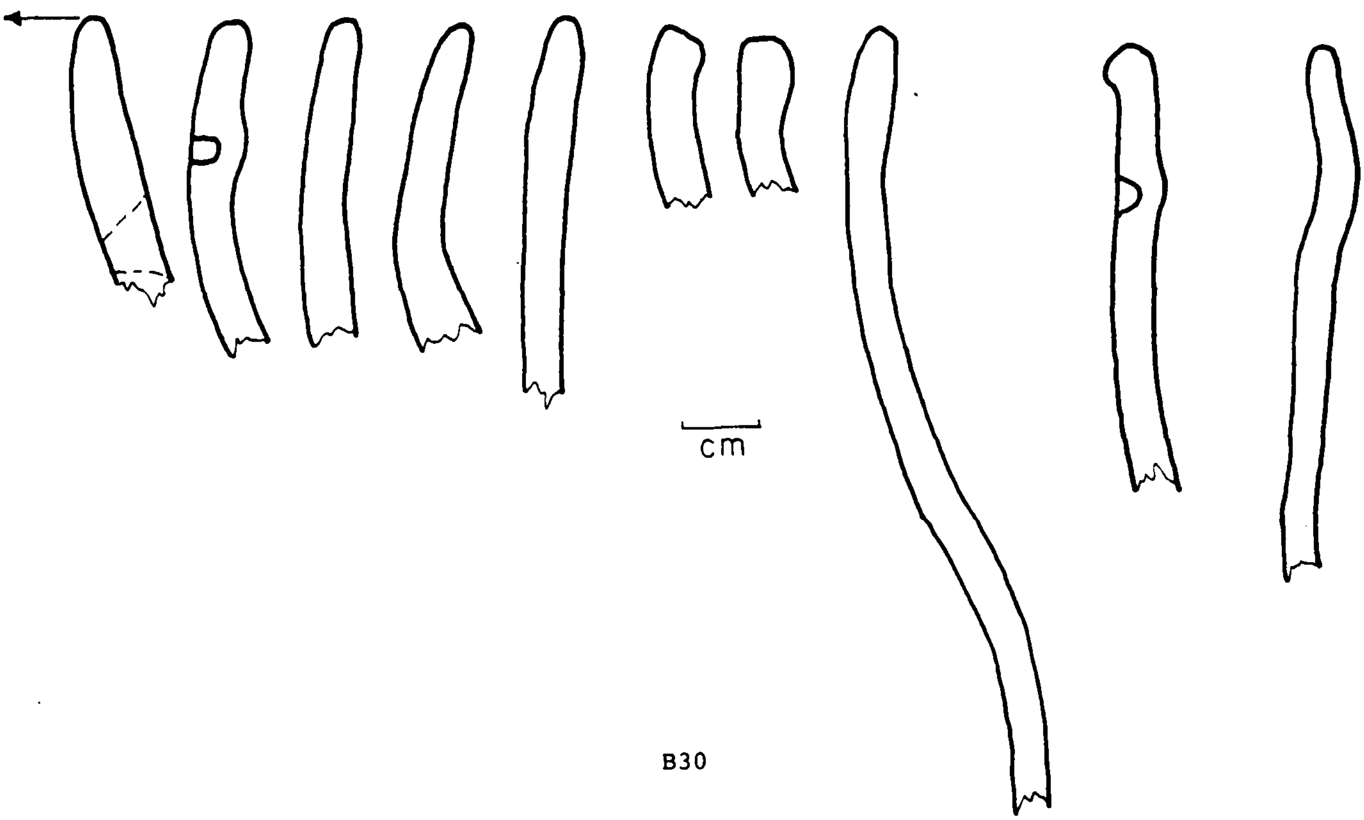


Figure B.14: (above) Madrid Stamped (left half), Madrid var. trailed (upper right) and Madrid Plain with channeled rim (lower right); (below) Madrid Stamped rim profiles (left half), var. trailed rim profile (2nd from right) and channeled rim profile (right).



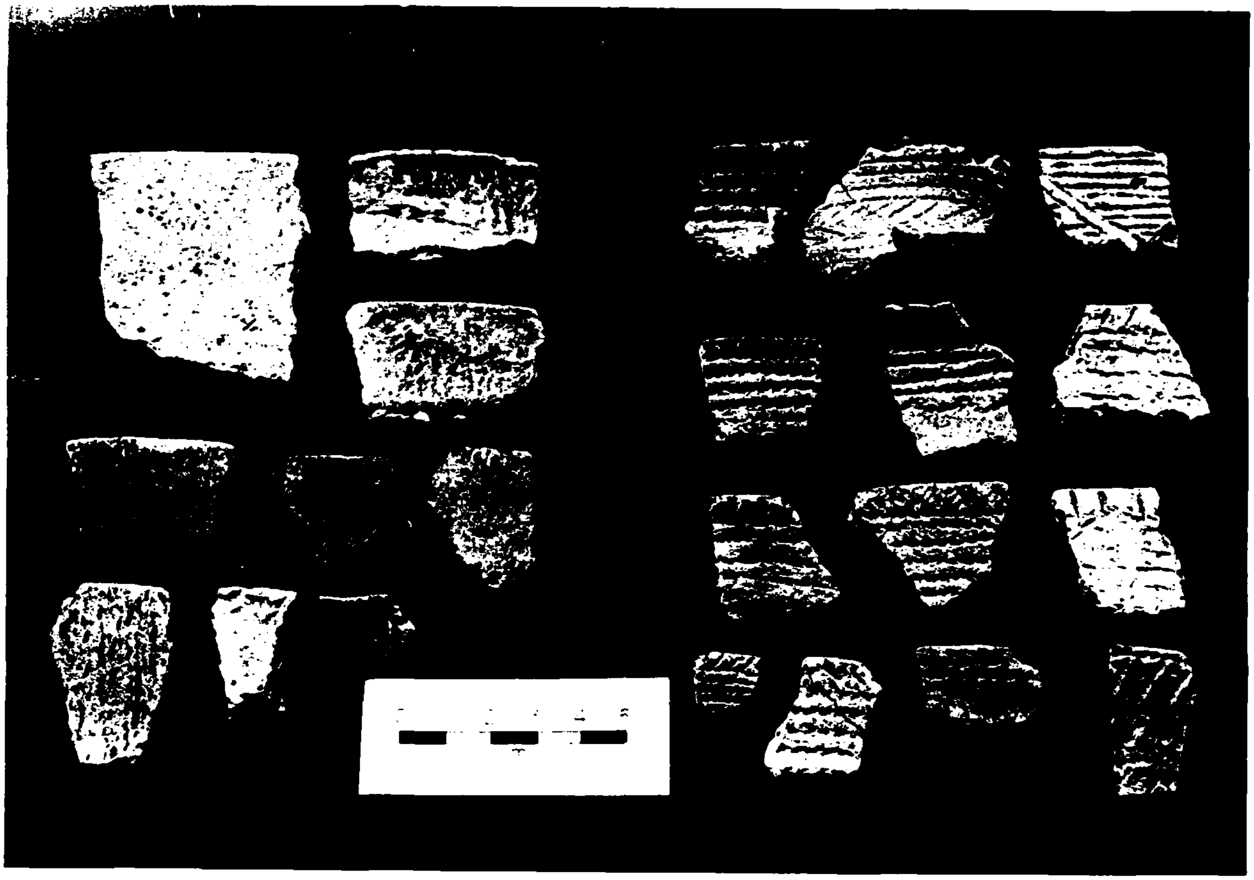


Figure B.15: (above) late Late Woodland cord roughened (left half) and cord impressed (right half); (below) rim profiles for late Late Woodland cord roughened (immediately below) and cord impressed (bottom row).

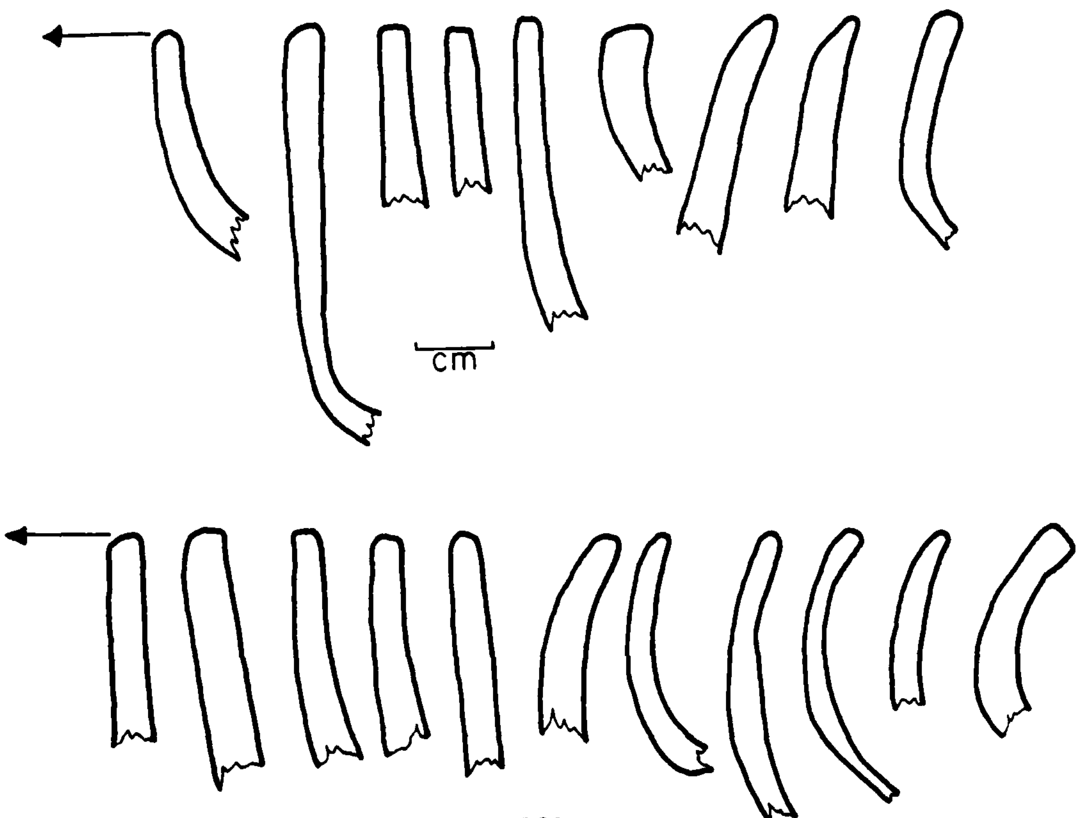


Figure B.16: late Late Woodland cord roughened vessel from 13BN103.

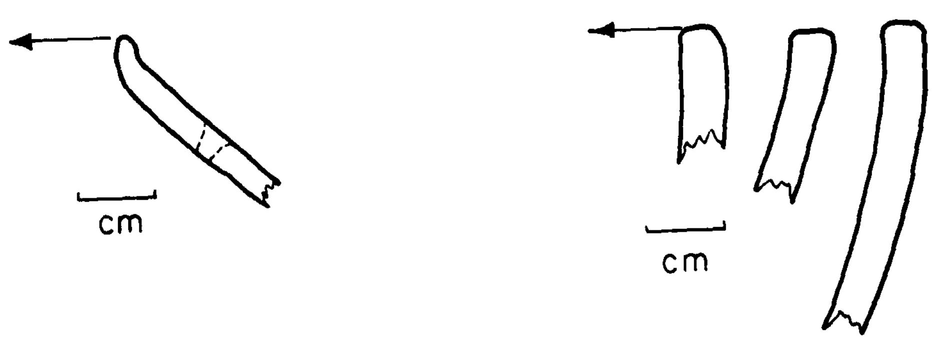


Figure B.17: rim profiles for miscellaneous Late Woodland jar (left) and bowls (right).

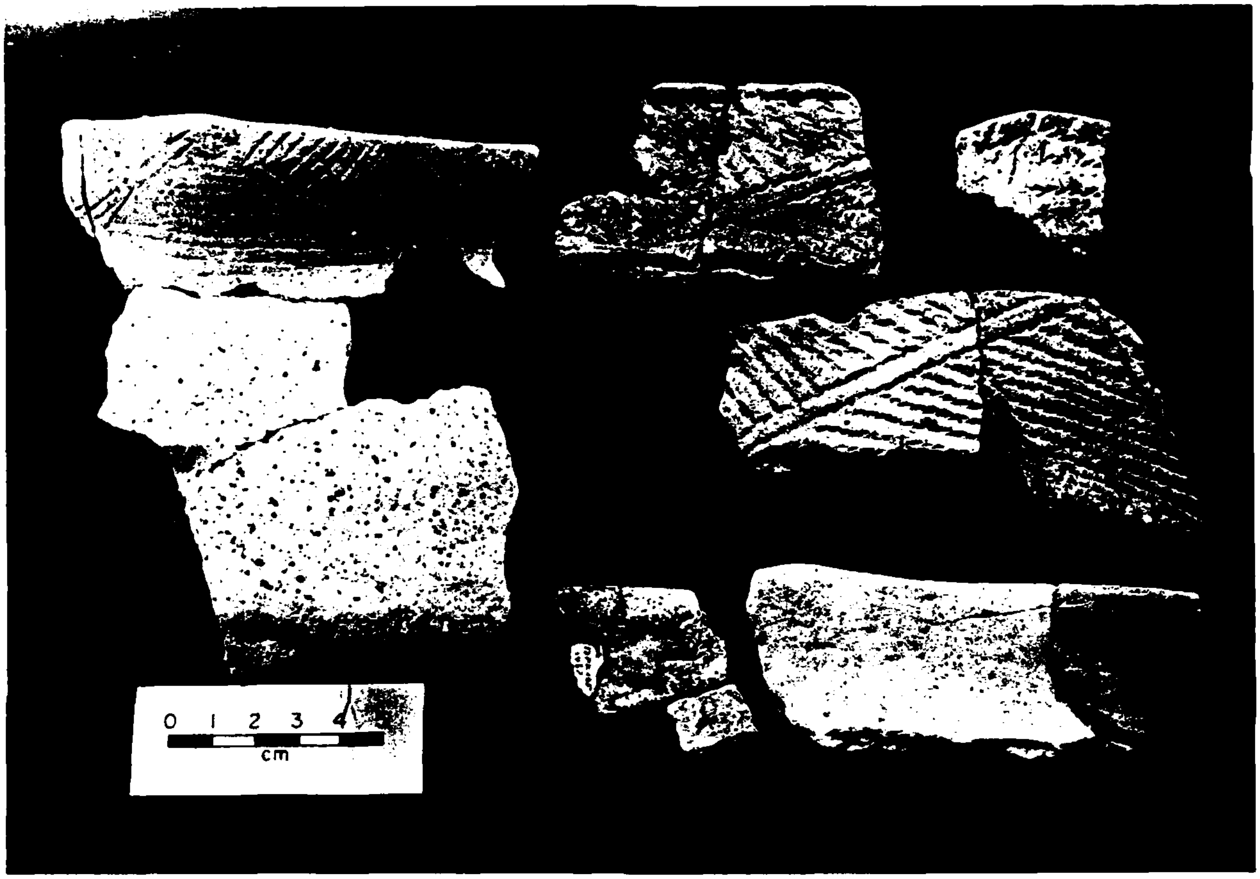


Figure B.18: Saylor Cord Impressed (above) and Saylor Plain (two lower right rims).

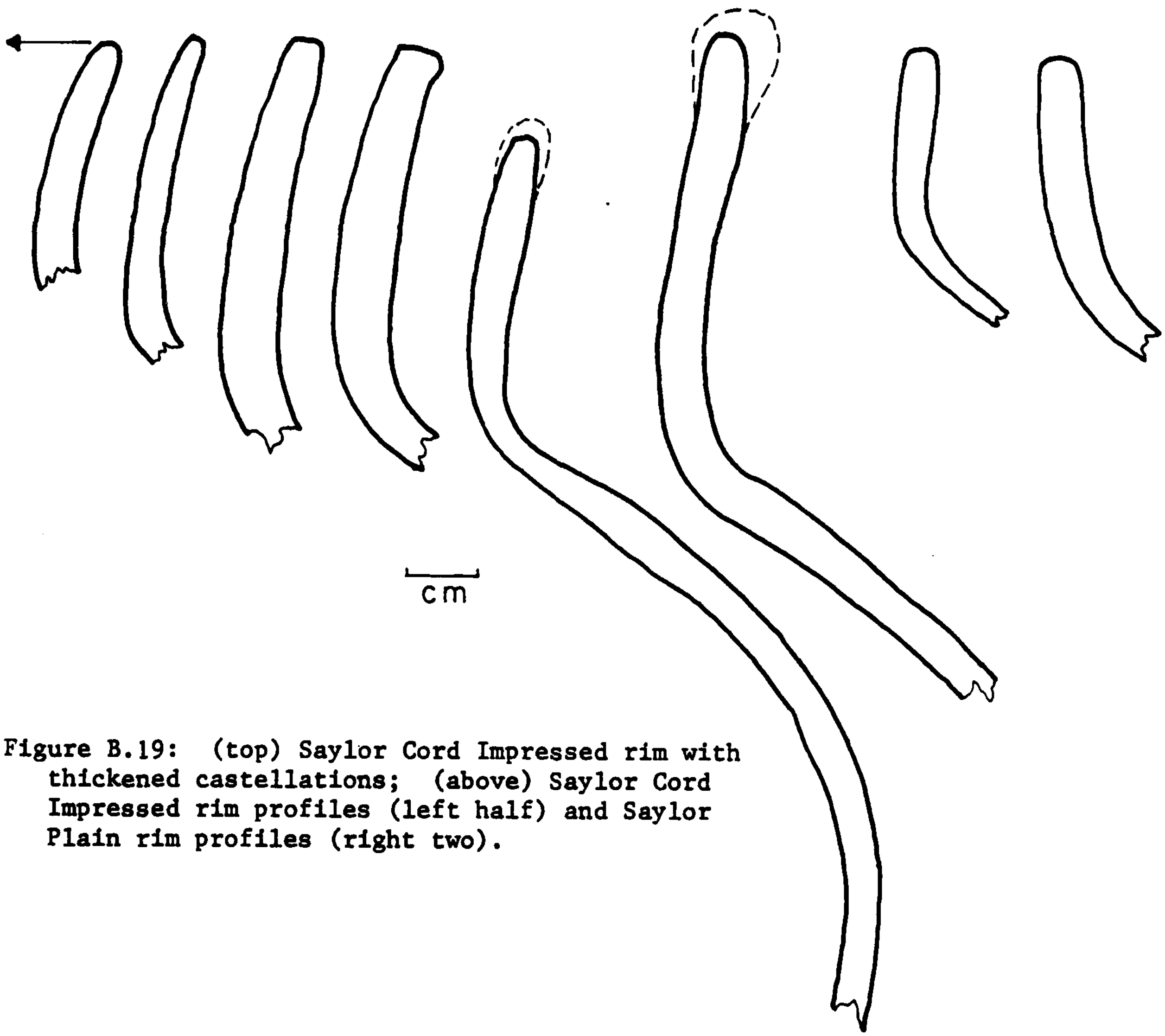


Figure B.19: (top) Saylor Cord Impressed rim with thickened castellations; (above) Saylor Cord Impressed rim profiles (left half) and Saylor Plain rim profiles (right two).

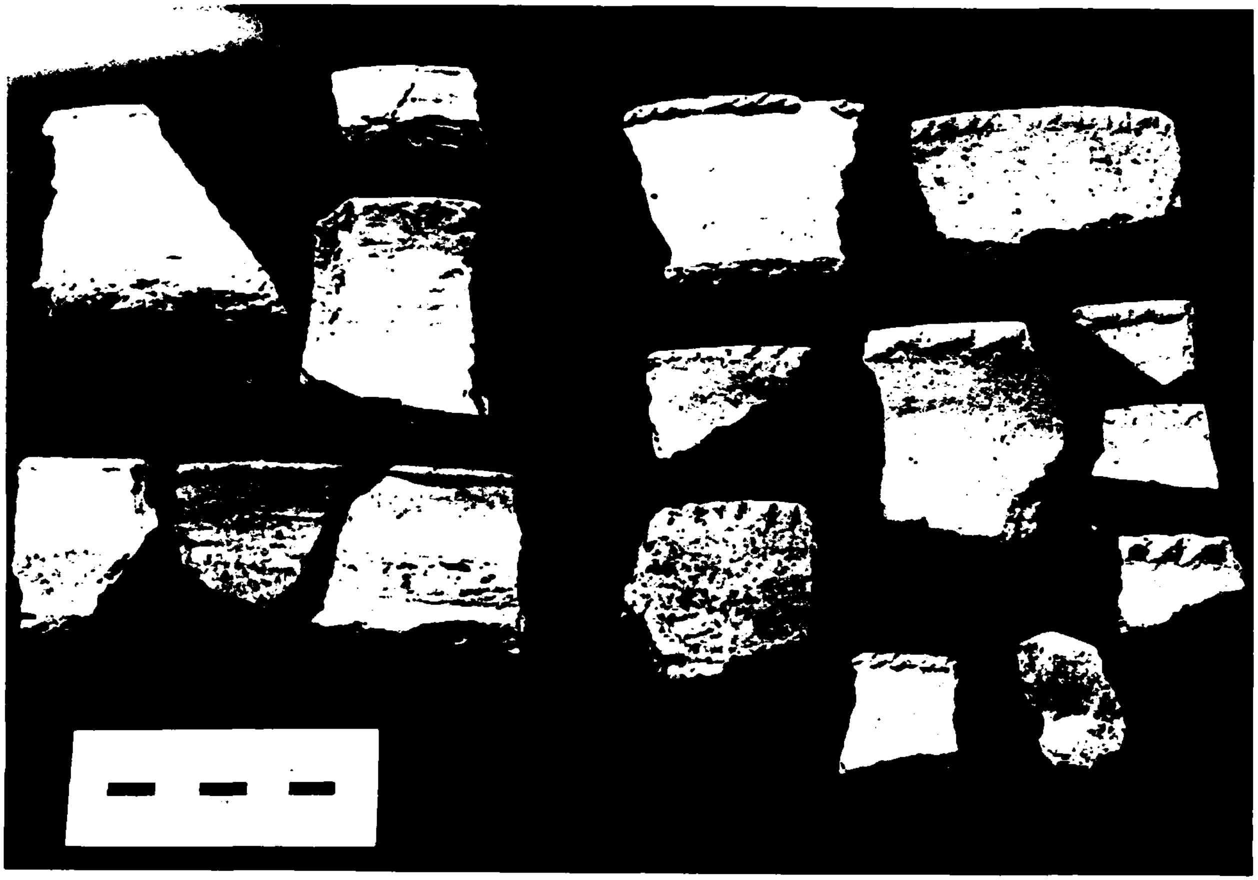
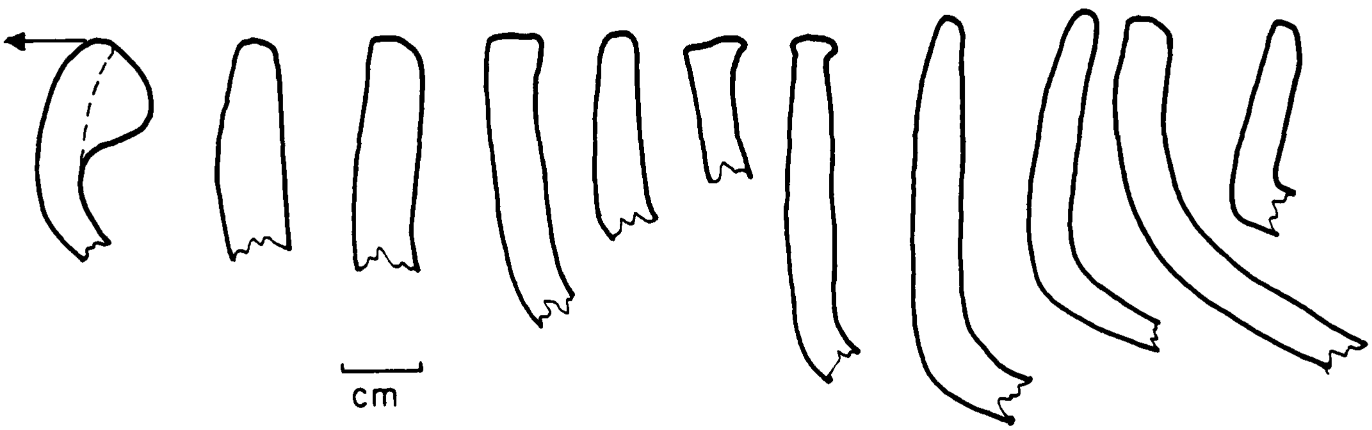


Figure B.20: (above) rims similar to Great Oasis High Rim (notched lips on right half; castellated rim at extreme lower right); (below) rim profiles of rims shown above.



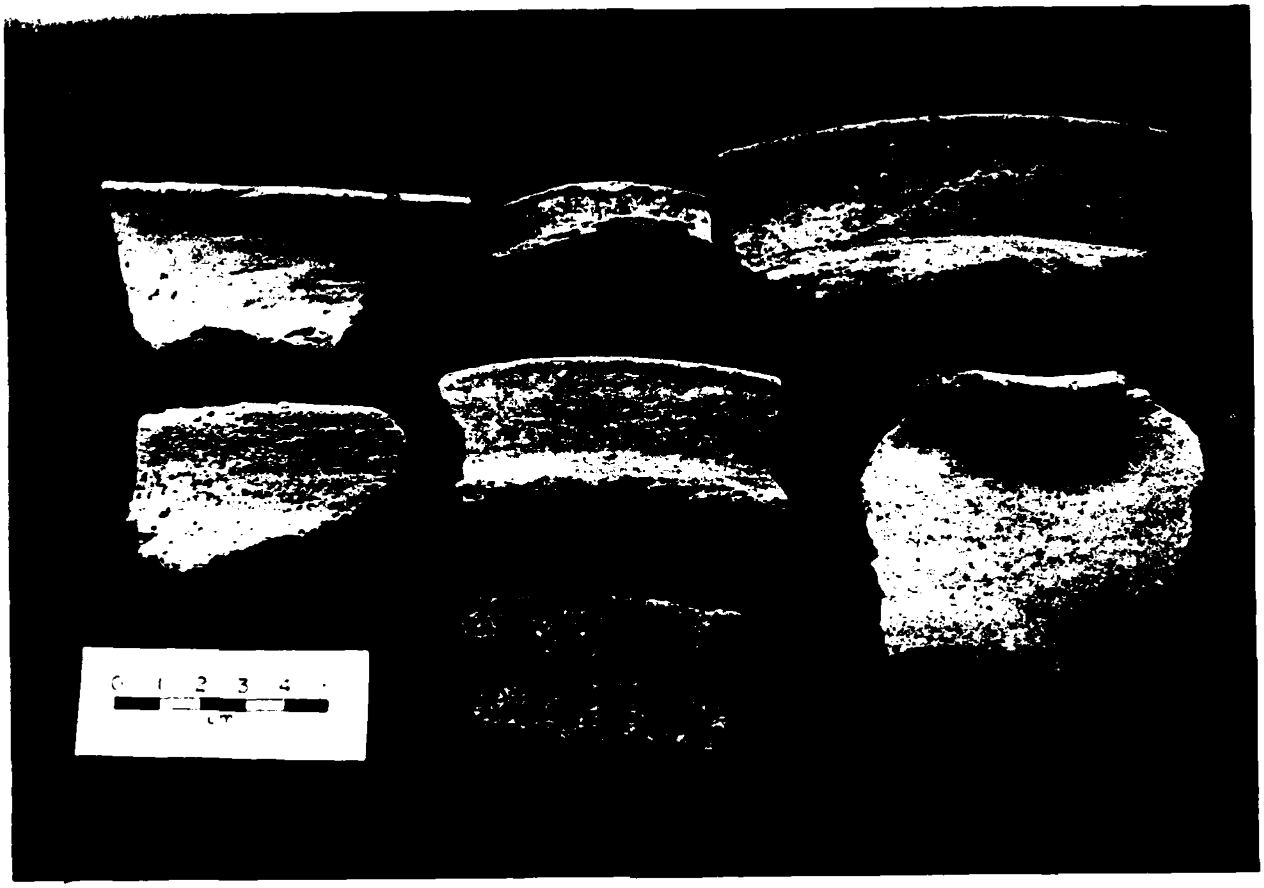
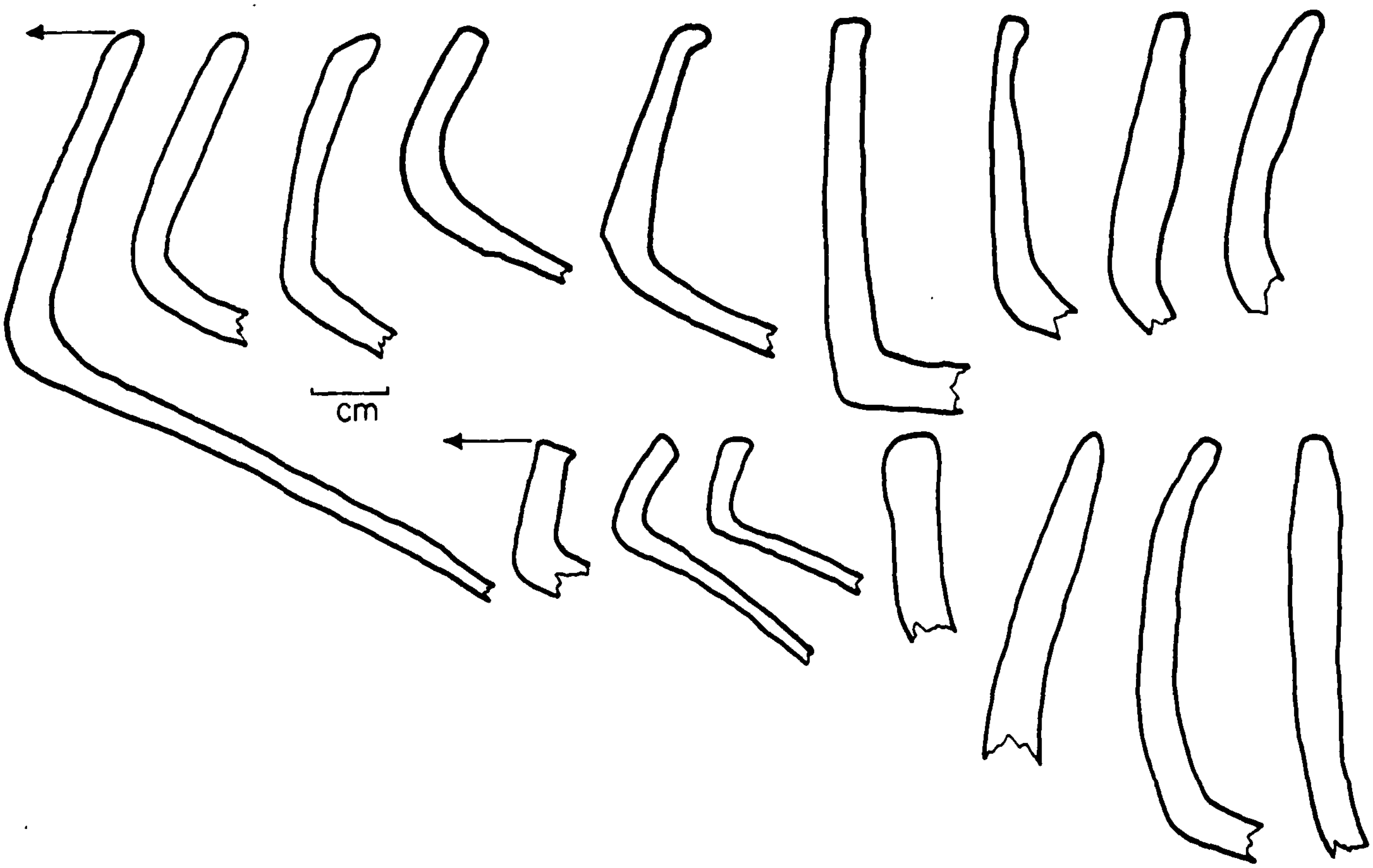


Figure B.21: Great Oasis High Rim (above) and rim profiles (below).



APPENDIX C

Memorandum of Agreement
Scope-of-Work
SMSU-CAR Proposal
Correspondence

Advisory Council
On Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

MEMORANDUM OF AGREEMENT

WHEREAS, the U.S. Army Corps of Engineers is constructing the Saylorville Lake Flood Control Project, Des Moines River, Iowa; and,

WHEREAS, the U.S. Army Corps of Engineers, in consultation with the Iowa State Historic Preservation Officer, has determined that this undertaking as proposed would have an adverse effect upon the Saylorville Archaeological District a property determined by the Secretary of the Interior to be eligible for inclusion in the National Register of Historic Places; and,

WHEREAS, pursuant to Section 2(b) of Executive Order 11593, the U.S. Army Corps of Engineers has requested the comments of the Advisory Council on Historic Preservation; and,

WHEREAS, pursuant to the procedures of the Advisory Council on Historic Preservation (36 C.F.R. Part 800), representatives of the Advisory Council on Historic Preservation, the U.S. Army Corps of Engineers, and the Iowa State Historic Preservation Officer have consulted and reviewed the undertaking to consider feasible and prudent alternatives to avoid or satisfactorily mitigate the adverse effect; now,

THEREFORE:
It is mutually agreed that implementation of the undertaking, in accordance with the following stipulations will satisfactorily mitigate any adverse effect on the above-mentioned property.

1. Those portions of the Des Moines River Valley and environs acquired by the U.S. Army Corps of Engineers for Saylorville Lake which have not yet been investigated to determine archaeological site locations shall be surveyed and surface collections obtained to facilitate identification of cultural affiliation. There shall be contined rechecking for sites if significant changes in surface conditions should occur, due to future action undertaken in management and operation procedures of the project.

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

2. Conservation Pool
Intensive archaeological excavation shall be considered appropriate mitigative action for significant sites below elevation 845, with the degree and type of investigation to be determined in consultation with the Iowa State Historic Preservation Officer. Within 5 years of completion of the field investigations, a publishable report of the findings of this research project will be filed with the Iowa State Historic Preservation Officer and with the Iowa State Archaeologist.

3. Flood Pool
Additional intensive archaeological investigations shall be considered within the designated flood pool area after certain intervals (3-5 years) of operation, for re-assessment of appropriate mitigative action resulting from bank slumping (wave cutting) conditions. The contract for this work shall contain a provision that a publishable report be filed with the Iowa State Historic Preservation Officer and with the Iowa State Archaeologist. A reasonable time limit will be set for the completion of the report in consultation with the Iowa State Historic Preservation Officer, and shall be a part of the contract.

4. Development Zone
In those portions of the fee acquisition area which are under the control of the Corps of Engineers, or which have been leased to other agencies for development or use, cultural resources shall be treated in the following manner:

   a. Identified cultural resources subject to future disturbance shall be tested to determined cultural affiliation, age, and an assessment of data-potential.

   b. Agency planners responsible for development projects shall take cognizance of the presence of historical, architectural, and archaeological resources in the Saylorville Archaeological District in their planning, and shall make every effort to develop plans which shall preserve significant cultural resources.

   c. The Corps of Engineers shall provide the Iowa State Historic Preservation Officer with such plans for review and consultation in accordance with Advisory Council Procedures.

d. In instances where agency plans cannot be developed in a manner resulting in avoidance of impact on a significant cultural resource, consultation with the State Historic Preservation Officer will be initiated. In instances where there will be adverse effect on archaeological resources, the Corps of Engineers shall insure that appropriate investigations are performed to recover site data necessary for the interpretation of prehistory in the Saylorville Archaeological District. Such plans shall meet with the approval of the Iowa State Historic Preservation Officer. In instances where there will be adverse effect on historic or architectural resources, Section 800.5 of the Advisory Council's procedures will be followed.

e. The Corps of Engineers shall afford the opportunity for a professionally qualified archaeological monitor to be present during earth-moving activities within archaeologically sensitive areas to insure that previously unobserved archaeological sites will be identified prior to complete destruction, and if deemed necessary after consultation with the Iowa State Historic Preservation Officer time for emergency data recovery shall also be afforded.

f. The contract for archaeological, historic and architectural work shall include a provision that a publishable report be filed with the Iowa State Historic Preservation Officer and the Iowa State Archaeologist. A reasonable time limit for completion of the report will be set in consultation with the Iowa State Historic Preservation Officer, and shall be a part of the contract.

5. All contracts for cultural resources work will include the following provisions:

a. Upon completion of the field investigations all excavated areas, not otherwise to be disturbed by the undertaking, will be backfilled and the terrain restored as much as possible to its appearance prior to the start of this investigation.

b. Upon completion of the laboratory research all artifacts and other material of archaeological, historic and architectural value collected at the Saylorville Archaeological District will be retained, at the discretion of the State of Iowa, by the institution of the principal investigator and be kept available for public inspection and research. Such cultural material will also be made directly available to the Corps of Engineers for public display purposes associated with the Saylorville Lake Project.

c. Upon completion of this research project all field records, photographs, slides, and experimental data will be retained, at the discretion of the State of Iowa, by the institution of the principal investigator and be kept available for public inspection and research.

6. The integrity of the Saylorville Archaeological District shall be reevaluated in consultation with the Iowa State Historic Preservation Officer within 8 months of the ratification of this agreement by the Council Chairman. If it is judged that the property retains its integrity as a district, the Corps shall, at that time, nominate it for inclusion in the National Register of Historic Places. If it is judged that the district integrity has been lost, appropriate individual site or district nominations shall be pursued by the Corps.

Robert R. Garvey (date) Jan 13, 1976
Robert R. Garvey, Jr.
Executive Director
Advisory Council on Historic Preservation

28 Jan 1976
Daniel L. Lycan, Col, EN (date)
U.S. Army Corps of Engineers

Clement M. Silvestro (date) 5/21/76
Clement M. Silvestro
Chairman
Advisory Council on Historic Preservation

(date) 7 May 1976
State Historic Preservation Officer

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

ADDENDUM TO

MEMORANDUM OF AGREEMENT

SAYLORVILLE LAKE PROJECT, IOWA

Items 2 and 6 of the attached Memorandum of Agreement are amended to read as follows:

2. Conservation Pool
Intensive archeological excavation will be considered appropriate mitigative action for significant sites below elevation 860, with the degree and type of investigation to be determined in consultation with the Iowa State Historic Preservation Officer. Within 5 years of completion of the field investigations, a publishable report of the findings of this research project will be filed with the Iowa State Historic Preservation Officer and with the Iowa State Archeologist.

6. The integrity of the Saylorville Archeological District will be reevaluated in consultation with the Iowa State Historic Preservation Officer upon completion of initial construction and mitigation. If it is judged that the property retains its integrity as a district, the Corps will, at that time, nominate it for inclusion in the National Register of Historic Places. If it is judged that the integrity of the district has been lost, appropriate individual site or district nominations will be prepared by the Corps.

(date) 3/31/78
Deputy Executive Director
Advisory Council on Historic Preservation

Col, EN (date) 21 Apr 78
U.S. Army Corps of Engineers

E-5

(date) 4/27/78
Iowa State Historic Preservation Officer

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of

Page Two
Addendum to
Memorandum of Agreement
Saylorville Lake Project, Iowa

Richard H. Jenrette (date) 6/13/78
Chairman
Advisory Council on Historic Preservation

H34-PR

JUN 19 1975

M. Barnes 11 Jun 75
6-11-75 CShull
K Cole 6-12-75
for NR

Colonel Walter H. Johnson
Corps of Engineers
Department of the Army
Clock Tower Building
Rock Island, Illinois 61201

Dear Colonel Johnson:

Thank you for your request for a determination of eligibility for inclusion in the National Register on the Saylorville Archeological District pursuant to Section 800.4(a)(2) of the procedures of the Advisory Council on Historic Preservation for compliance with the National Historic Preservation Act of 1966 and Executive Order 11593.

After evaluation of the documentation which we have on the Saylorville Archeological District and in consultation with the Iowa State Historic Preservation Officer, we have determined that the Saylorville Archeological District is eligible for inclusion in the National Register of Historic Places under criteria (D) of the National Register Criteria for Evaluation. This district encompasses the Federal lands owned in fee in the Saylorville Lake project, made up of Reconnaissance Units 1-20.

As you understand, a request for our professional judgment pursuant to the Advisory Council's procedures in this regard, developed in consultation, inter alia, with the Corps of Engineers, constitutes a part of the Federal planning process. We urge that this information be integrated into the National Environmental Policy Act analysis to permit the Corps of Engineers to reach the most effective program decisions. This determination of eligibility for inclusion in the National Register does not serve in any manner as a veto to uses of such property, with or without Federal participation or assistance. Any decision on the property in question and the responsibility for program planning concerning such properties lies with the Corps of Engineers after the Advisory Council on Historic Preservation has

FROM SOLICITOR

19

FOR SIGNATURE

had an opportunity to comment.

We appreciate your assistance and cooperation in the implementation of Executive Order 11593.

Sincerely yours,

(Sgd.) A. R. Mortensen

Director, Office of Archeology
and Historic Preservation

cc: Mr. Adrian Anderson
Director, State Historical Department
Division of Historic Preservation
B-13 MacLean Hall
Iowa City, Iowa 52242 w/cy inc

Dr. David M. Gradwohl
Department of Sociology and
Anthropology
103 East Hall
Iowa State University
Ames, Iowa 50010 w/cy inc

Mr. Richard Leverty
Attention: DAEN-CWP-V
Corps of Engineers
Department of the Army
Washington, D.C. 20314 w/cy inc

bcc: SOL - Pete Raynor w/cy inc
DG - Advisory Council w/cy inc
Regional Director, Midwest Region, Attn: Environmental Specialist
Director's Reading File
DI
PH
PR w/cy incl 11593 File
MQ w/cy inc
FNP: MBarnes:dph:6/11/75 BASIC FILE RETAINED IN PR

PART I - Section C, Description/Specification

I. PURPOSE

1.1 The purpose of this solicitation is to obtain an Interpretive Cultural Resources Overview, a Cultural Resources Management Plan, and sample testing for key archeological/geomorphic contexts. The overall objective is to provide an up-to-date synthesis of existing data that can be incorporated within the Management Plan. The information derived through this contract will be used to reevaluate the status of cultural resources at Saylorville Lake, critically examine the rationales for the project Archeological District (listed in the National Register), and provide research/management direction for the future.

1.2 While work on this contract is taking place, a separate geomorphological project will be carried out at Saylorville Lake. The geomorphological contractor will be required to provide information on landscape evolution, fluvial history, and stratigraphic contexts during the course of their work. The successful Offeror under this solicitation will be expected to utilize this information, as it is provided, for application to cultural resource studies referenced in section 1.1 above. Likewise, the Contractor handling cultural resources will be expected to provide information to the geomorphological Contractor so that each of the projects will have the advantage of incorporating information required for accurate interpretation.

1.3 The result will be high quality, publishable reports articulating the work items solicited under this contract with previous investigations and the Rock Island District Master Plan for Saylorville Lake (or drafts thereof). The cultural resources management plan shall be designed to guide all research, preservation, conservation, and adaptive reuse activities within the overall objectives of this District to operate the reservoir project. This plan shall be thoroughly reviewed by this District and the State Historic Preservation Officer and possibly revised prior to its use.

1.4 This action is being done in compliance with the National Historic Preservation Act of 1966 (as amended), Executive Order 11593, the Archaeological and Historic Preservation Act of 1974, Title 36 of the Code of Federal Regulations, and the existing Memorandum of Agreement for the Saylorville Lake Archeological District. Additional references include the guideline entitled Treatment of Archeological Properties (Advisory Council on Historic Preservation 1980), and guidelines recently set forth by the National Park Service, Department of the Interior entitled Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (Federal Register Vol. 48, No. 190:44716-44742).

PART I - Section C, Description/Specification (Continued)

II. PROJECT BACKGROUND

2.1 Saylorville Lake is a multi-purpose flood control project on the Des Moines River. The dam that impounds the lake is located about 6 miles upstream of the city of Des Moines in Polk County, Iowa. The lake itself, including the flood control pool, lies in portions of Polk, Dallas, and Boone Counties. The work planned under this contract, however, will include sites from all three counties.

2.2 Saylorville Lake currently operates at elevation 836 NGVD (National Geodetic Vertical Datum, approximately the same as MSL) in summer and 838 NGVD in winter. In 25 years, the operating elevation may be 838 NGVD in summer and 840 NGVD in winter.

2.3 The U.S. Army Corps of Engineers (COE), Rock Island District, fee title real estate interest at Saylorville Lake consists of 25,515 acres of land. This figure includes 5,950 surface acres of water at 836 NGVD and 2,336 acres acquired for the Saylorville Downstream Corridor. The fee title real estate consists of numerous parcels of land situated along the left and right shoreline of Saylorville Lake in Polk, Dallas, and Boone Counties. In addition, the District has obtained 1,392 acres of flowage easements.

2.4 There are approximately 14,014 acres of land leased for recreational and fish and wildlife purposes at Saylorville Lake. The largest lease is to the Iowa Conservation Commission (ICC) for the administration of 11,787 acres of fee-owned land and water for the purpose of development, conservation, and management of wildlife resources.

2.5 At a conservation pool level of 833 NGVD, Saylorville Lake has approximately 39 miles of shoreline. Thirty-eight miles of the shoreline are held in fee title by the U.S. Army Corps of Engineers, with the State of Iowa and Polk County owning approximately 1 mile of shoreline.

2.6 Cultural resource investigations conducted to date have provided a substantial body of site-specific locational data for some 450 sites in the Saylorville Lake area. It is likely, however, that many sites have not yet been found. Many of these are likely buried sites not identified by earlier surface surveys or sites masked by heavy vegetation. For this reason, many development actions will require subsurface testing designed to overcome problems with alluviation and vegetation.

2.7 Geomorphological investigations were conducted in the Saylorville Downstream Corridor beginning in 1980 (Benn & Bettis 1981). As part of this study, Benn and Bettis developed a general geomorphological sequence for the Des Moines River Valley: (1) high terrace development, 8,500 B.P. before the present B.P. to 4,000 B.P., (2) alluvial fan development, 8,000 B.P. to 2,000 B.P., (3) intermediate terrace development, 4,000 B.P. to 1,000 B.P., and (4) low terrace development, A.D. 1,000 to present. As a result of this study, it was clear that the river valley development (including meanders and terraces) affected the way in which prehistoric groups utilized the landscape. Benn and

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Bettis were able to determine relationships between site locations (and their functions and cultural affiliations) and various landforms in the Des Moines River Valley. Historic materials would be scarce on low terraces, but relatively dense on intermediate and high terraces. Paleo-Indian sites and Early through Middle Archaic sites would be most common on high terraces where erosion and historic disturbances have also been most severe. Woodland and Late Archaic sites would occur most frequently on intermediate terraces (habitation and campsites), but these sites may be buried by alluvium. Woodland Period mortuary sites would be expected on the bluffs at the edge of the valley. Therefore, the majority of extant sites within the reservoir area tend to be small lithic scatters from the Paleo-Indian and Early through Middle Archaic Periods which are often exposed on remnant high terraces. This may mean that in spite of extensive survey and mitigation, a major portion of the prehistoric and historic record for the reservoir area has been lost, primarily because the problem of site burial was not fully considered, and that the extractive camps that remain upstream of the dam are in areas where erosion and recent historic disturbances have been the greatest.

2.8 In general, the downstream corridor studies have established that significant periods of real time are not represented by flood plain surfaces or contexts. Therefore, only limited segments of real time, or cultural time, have been dealt with by previous surface surveys elsewhere in the Des Moines River Valley. Consequently, the existing site data base is biased. The downstream studies indicate that (1) certain time periods are under-represented (or over-represented), (2) site contexts of the same age are skewed (e.g., Woodland sites on old low terraces, but not in the lower landscape positions), and (3) certain data classes and physical data contexts are absent (e.g., fragile botanical or faunal remains which would be preserved in buried contexts but not in sola or plowzones or easily separated site components). Of greatest importance, however, is that both the quality and quantity of existing data from the alluvial landscape in Saylorville can be evaluated with information available from the downstream study.

2.9 For the related geomorphological contract, a major goal will be to determine the kinds and degrees of landscape change which preserved or destroyed archeological evidence in various depositional contexts. In this definition, sites are deposits. Site meaning is ascribed; site content and size are purely physical. Since site deposits are preserved on or within alluvial deposits, it is necessary to understand the larger, encompassing landscape system to determine the degree and context of site preservation. The central task of the planned geomorphological study will be to describe and map alluvial deposits with detail needed to guide this archeological study.

III. PREVIOUS INVESTIGATIONS

3.1 Cultural resources in the central Des Moines River Valley have been studied since the late 19th century. It was not until the initiation of the Saylorville Lake project, however, that extensive field investigations were undertaken. Based upon the results of biased sample surveys, the Saylorville

PART I - Section C, Description/Specification (Continued)

Lake project area was determined eligible for listing in the National Register of Historic Places as a District. This was because of the large number of sites, the range of cultural periods represented by the sites, and the potential of the sites for answering research questions about both prehistoric and historic cultural development in the central Des Moines River Valley. Once the Determination of Eligibility was obtained, a priority system was agreed upon by the COE and the Iowa State Historic Preservation officer (SHPO) for application to a Memorandum of Agreement with the SHPO and the Advisory Council on Historic Preservation. The investigation solicited under this contract will proceed under this Memorandum of Agreement. It is anticipated the specific sites will be evaluated for separate nomination in the future.

3.2 On 19 July 1975, the Saylorville Archeological District was determined eligible for inclusion in the National Register of Historic Places. The boundaries of this district are defined as the project fee property taking. On 21 May 1976, the Memorandum of Agreement for the Saylorville Archeological District was ratified. An Addendum to this agreement was ratified on 13 June 1978 which stipulates District reevaluation after completion of mitigation.

3.3 Extensive archeological work has been conducted at Saylorville Lake by several institutions under various auspices. Most of the work has been done by the Iowa State University Archeological Laboratory (David Gradwohl and Nancy Osborn) under contracts with the Rock Island District. More recently, however, investigations by Impact Services, Inc. (Pat Emerson 1983 and 1984) have refined our understanding of cultural resources at Saylorville Lake, and, in particular, for the sites potentially within the area to be affected by the proposed pool raise. Investigations by Benn and Bettis (1980), Benn and Harris (1982) and Benn (1984) in the downstream corridor are critical for understanding geomorphological processes. These reports provide for most up-to-date information on geomorphological factors as they relate to cultural resources at the Saylorville Lake project.

3.4 The University of Iowa undertook a reconnaissance level survey of the project area under the auspices of the National Park Service (NPS) in 1964. This survey was conducted by personnel of the University of Iowa under the direction of Marshall McKusick, then the State Archeologist. Sixty-one sites were reported in that survey. The field effort was of a very broad, cursory nature as mandated by the funds appropriated for the survey.

3.5 The 1966 archeological reconnaissance of the Saylorville Reservoir was conducted as a part of the Interagency Archeological Services (IAS) Salvage Program. The 1966 activities were conducted by the River Basin Surveys, Smithsonian Institution, Lincoln, Nebraska, as a supplement to the 1964 survey carried out by the University of Iowa. The report combines the results of both the University of Iowa and River Basin Surveys activities. The purposes of the second reconnaissance were: to reexamine previously known sites in the area, to locate and plot additional sites, to evaluate the archeological importance of the sites involved, and to provide recommendations regarding the feasibility of salvage operations for the sites. Fieldwork conducted during the period of 5-21 July 1966, was performed by a two-man team.

PART I - Section C, Description/Specification (Continued)

3.6 In May 1973, the Iowa Historic Department, Division of Historic Preservation, SHPO, sponsored a small but intensive survey performed by Iowa State University at Ames, Iowa, under the direction of David Gradwohl. This survey report initiated the program established to systematically obtain an adequate archeological resource inventory for the entire project area, as mandated by Section 106 of the National Historic Preservation Act of 1966. The area directly upstream of the damsite was surveyed. Only one site had been previously identified in this area; this intensive survey yielded an additional 20 sites. The results of this study indicated that an extensive number of sites in the project area had yet to be identified. Prior to the preparation of the Final Environmental Impact Statement for the Saylorville project (filed 16 May 1974), the COE assumed the responsibility for undertaking an intensive survey involving remaining project lands. This work was continued by David Gradwohl of Iowa State University, beginning in late 1973 and ending in 1974. Under a series of contracts between COE and Iowa State University (1975-1981), David Gradwohl and Nancy Osborn directed work that included: (1) completing surveys upstream of the dam, (2) testing and recovering of data from selected sites in the conservation pool, (3) monitoring of construction activities, and (4) testing of sites designated as Priority I under the mitigation plan. This plan established a priority system for archeological sites and six general research questions applicable to research at Saylorville Lake. The plan was developed by Roy Eichhorn and Stan Riggle in January 1980. Several reports described this work, the most comprehensive being Saylorville Stage 2 Contract Completion Report - Archeological Investigations in the Saylorville Lake Project, Iowa, dated January 1981.

3.7 An archeological and geomorphological survey conducted by the Luther College Archeological Research Center (LCARC) during 1980, identified 26 prehistoric and 12 historic sites within the Saylorville Downstream Corridor at Saylorville Lake (Benn & Bettis 1981) where previous surveys had identified only two sites. The historic sites date between ca. 1870 and 1920, and the prehistoric sites represent Archaic, Woodland (EW, LW), and post Woodland (Oneota) occupations. A number of the sites are multi-component. The potential for locating major Woodland and later (i.e., Oneota) Great Oasis village sites upstream of the dam appears to be low because of inundation. On the other hand, the potential for locating similar sites in the Saylorville Downstream Corridor is high due to the LCARC survey which improved our understanding of river valley geomorphology as related to utilization by prehistoric and historic populations. Although mound complexes (Woodland) may be encountered on bluffs, and habitation sites on high and intermediate terrace remnants, most of the tracts are on high terraces in heavily dissected areas where erosional actions have likely deflated or completely displaced many sites. Most of these areas were farmed or used for pasture during the last 100 years, further exacerbating an already severe erosional situation. Thus, the Saylorville Downstream Corridor is significant because landforms which are under the pool upstream of the dam remain exposed and accessible for archeological investigations. This and future work in the Saylorville Downstream Corridor will be useful to determine the full range of prehistoric and historic occupations for the area and to understand what resources are now inundated upstream.

PART I - Section C, Description/Specification (Continued)

3.8 Southwest Missouri State University, Center for Archeological Research, initiated a testing program for the Downstream Corridor at Saylorville Lake. The purpose of this investigation was to determine the research potential of nine archeological sites and to collect sufficient information for the COE and the Iowa State Historic Preservation Officer to consider the question of eligibility for listing in the National Register of Historic Places on an individual basis. The draft report (Benn & Harris 1982) was reviewed by the National Park Service and the Iowa State Historic Preservation Officer. A final report was received by the Corps of Engineers, Rock Island District, in June 1982. This report describes and refines a new epistemological/methodological approach for studying cultural deposits in alluvial settings initiated while the principal investigator (Dr. Benn) was at Luther College (1981 Survey of Saylorville Downstream Corridor). The nine sites were also considered in light of proposed recreational developments currently in the planning stage; problems with erosion were also addressed. As a result of the study, a bicycle path and an access road were redesigned to avoid impacts on sites 13PK410 and 13PK413. In addition, site 13PK407 (an Oneota occupation) was excavated in the fall of 1983. Sites 13PK05, 13PK409, 13PK11, 13PK415, and 13PK424 were determined to be small, partially or wholly destroyed, and insignificant. Site 13PK414 contained insufficient evidence to justify immediate eligibility to the National Register of Historic Places, but in case of future impacts the right-of-way should be tested for significant cultural deposits.

3.9 By December 1982, 486 sites had been located and recorded above the dam, and 38 sites below the dam in Saylorville Downstream Corridor. Investigations at Saylorville Lake (including the Saylorville Downstream Corridor) have uncovered evidence of Paleo-Indian, Archaic, Woodland, Oneota, and Great Oasis cultures from the prehistoric period; Ioway, Ota, Sauk, and Fox (Mesquakie) from the proto-historic and historic periods; and remnants of various activities by Euro-Americans in the historic period.

3.10 Investigations by Impacts Services, Inc., from 1982 through 1984, (Pat Emerson) refined the understanding of cultural resources at Saylorville Lake, and, in particular, for the sites potentially within the area to be affected by the proposed pool raise. A total of 44 archeological sites (via previous surveys) were identified that would be affected by the proposed pool raise (833 to 836 NGVD) based upon previous investigations of the pool perimeter. Enough information had been collected for 17 of these sites for the Iowa State Preservation Officer and the Rock Island District staff archeologist (consulting parties) to agree that their loss by inundation would not affect those qualities which caused the creation of the archeological district. The deteriorated condition of the sites obviated the recovery of significant data from undisturbed contexts. Information for these sites is fully presented in the draft report entitled, Resurvey and Intensive Testing of Archeological Sites at Saylorville Lake, Polk, and Dallas Counties, Iowa (Emerson 1983).

Comparatively little was known about the remaining 27 sites. In this case, the consulting parties agreed that additional investigations were necessary to effectively evaluate the effects of the pool raise. All of the sites potentially contained undisturbed cultural deposits of sufficient quality to merit further consideration. Therefore, the consulting parties agreed to provide for the resurvey of the 27 sites in July 1982. The resurvey was done by Impact Services, Inc.

PART I - Section C, Description/Specification (Continued)

Based upon the results of the resurvey, the consulting parties selected 10 sites for further investigation at the intensive survey/testing level. The remaining 17 sites (of the 27 resurveyed) were deleted from further consideration because of minimal informational content and disturbances which precluded the loss of significant in situ cultural deposits. By agreement, the consulting parties directed Impact Services, Inc. (October 1982), to conduct the requisite intensive survey/testing level investigation to refine the understanding of geomorphological factors, cultural affiliations (potential situations of multi-componency), and levels of preservation for the 10 sites.

As a result of the intensive survey/testing level investigation, the consulting parties identified six archeological sites for further excavation. The selection was made based upon the results of investigation as described in a document entitled, Interim Report: Intensive Testing of Ten Archeological Sites at Saylorville Lake, prepared by Impact Services, Inc. (Emerson 1983). These six sites were excavated in 1983 under a Data Recovery Plan (approved by the SHPO) to mitigate the effects of the pool raise.

IV. PROPOSALS

4.1 The Contractor shall conduct this investigation in a manner that insures the greatest contribution to an understanding of Midwestern archeology. In an effort to insure this, prospective principal investigators shall submit a technical research proposal and a separate cost proposal to the Contracting Officer for evaluation. The technical proposal shall include sufficient discussion to fulfill the Scope of Work and how these needs will be met. Key personnel will be identified and manpower efforts (by hours) shall be included, but without costs. The cost proposal will be a detailed, itemized quotation for personnel, goods, and services required to accomplish the technical proposal. Overhead and wage rate figures shall be clearly presented, as well as any costs for equipment, transportation, per diems, lodging, and consultant services. The cost proposal shall be sealed in a separate envelope to insure that the technical evaluation can be accomplished without prejudice prior to evaluating cost proposals.

4.2 Prospective Offerors must adhere to the minimum professional qualifications set forth in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Federal Register 48:190:44716-44742). For the most part, these guidelines are compatible with standards set forth by the Society of Professional Archeologists (SOPA) and standards recommended by the Iowa State Historic Preservation Officer. It is the responsibility of the Contractor to insure that the designated principal investigator(s) and key personnel are in compliance with this requirement and that their qualifications are clearly set forth by vita and/or other documents. The Contractor shall identify by name, the principal investigator and key personnel in the proposal and document experience in work of this type in the Midwest, and preferably in the Des Moines River Valley. The principal investigator must be able to document involvement in the project, and will be held responsible for the technical quality of the work.

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4.3 Proposals will be evaluated as specified in Part IV, Section M. The technical evaluation team will evaluate the technical proposals first without prior knowledge or review of concurrently submitted price proposals. Therefore, it is in the best interest of the Offeror to include the data necessary to evaluate the merits of technical proposals, independent of cost considerations. Proposals must demonstrate that the Offeror is knowledgeable of previous work in the region, current research objectives, and state-of-the-art methodologies and techniques. Proposals that simply restate the Scope of Work or offer "canned" approaches may be judged technically inadequate.

4.4 Particular emphasis in proposal evaluation will be given to proposals offering a high quality product which will best identify and evaluate cultural resources in accordance with local and regional research objectives and management concerns.

4.5 Offerors should submit a comprehensive scheduling plan to document anticipated levels of effort.

4.6 Contract award will not necessarily be based upon low estimated price, but on the most advantageous combination of method, price, and schedule that best meets the Government's needs. This will be a firm-fixed-price negotiated contract.

4.7 Offerors are invited in their proposals to suggest improvements on the Scope of Work so long as the State minimum requirements are met. Any substantive changes will be dealt with during the negotiation (best and final) process for those within the competitive range. In order to insure making the competitive range, Offerors should provide alternative approaches in addition to approaches solicited under this RFP. The objective is to obtain the maximum amount of useful information in the most cost efficient manner. Note that award may be made without negotiation if a proposal is received that can be awarded as is.

4.8 Laboratory procedures shall be described for special studies such as soils and C-14 analyses. Prospective Contractors shall include in proposals a discussion of the capabilities and facilities to adequately perform required laboratory analyses proposed. Curation standards shall be those set forth by the National Park Service, Department of the Interior (Federal Register, Thursday, September 29, 1983:48:190:44737) entitled Archeology and Historic Preservation Standards; Secretary of the Interior's Guidelines. C-14 dating will be a critical element for interpreting geomorphological/stratigraphic contexts.

4.9 Remote sensing applications should be described if proposed, particularly in terms of the data sought and the efficiency of the application in relation to traditional collection procedures.

4.10 Prospective Offerors are advised to utilize the following recently developed documents when formulating proposals and carrying out the project:

a. Cultural resource studies and reports by Iowa State University (Gradwohl, Osborn, and Gradwohl and Osborn per Exhibit 5).

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b. Implementation of the Resource Planning Protection Process in Iowa (E. Henning 1982). Based upon Resource Protection Planning Process by Aten (1950).

c. Planning in Context. Draft guidelines formulated by Dr. Thomas King from the Advisory Council on Historic Preservation, 1982.

d. Problem Orientation and Allocation Strategies for Prehistoric Cultural Resources on the New Mexico National Forest, Cultural Resources Management Report No. 3 (Green and F. Plog 1983).

e. Cultural resources studies and reports by Benn and Harris (1982) and Benn and Bettis (1981).

The first set of reports generally describes the sites at Saylorville Lake and summarizes pre-1981 survey and testing efforts. The second reference delineates Iowa's RP3 study units which apply to the project. The "Planning in Context" or PIC approach described by King (1982) is generally consistent with the RP3 approach defined by Aten (1980). Offerors must formulate the overall cultural resources management plan based upon these two documents. Prospective Offerors are also encouraged to consider the utility of the allocation strategy (AS) process per item d above. In terms of defining preservation, conservation, and adaptive use criteria, the situation at Saylorville Lake is very similar to that for the New Mexico National Forests. Finally, the reports under item e above represent the latest cultural resources studies for Saylorville Lake, Iowa. Consideration of these geomorphological and cultural studies is imperative for RP3/PIC and overview development. These reports also provide up-to-date geomorphological evaluations and preliminary geomorphic modeling.

4.11 Copies of items a, b, c, d, and e listed in subsection 4.10 are available for onsite review at the Rock Island District Office, Rock Island, Illinois. The Iowa State Historic Preservation Officer (Dr. Adrian D. Anderson) and the Iowa State Archeologist (Dr. Duane Anderson) have copies of items a, b, c, and e for review at their offices. Copies of items c and d should be requested from the authors or their agencies.

V. SPECIFICATIONS

5.1 The Contractor shall produce an "Overview" of cultural resources in the Saylorville Lake project area. The term "overview" has been excerpted from the document entitled Planning in Context (King draft:1982), and has the following objectives:

a. To set forth what is known about the prehistory, history, and pertinent architectural history, ethnography, geography, ecology, and other factors relevant to the study area and its environs.

b. To describe and evaluate the quality of the studies and other data sources upon which knowledge of the area's history, prehistory, and other pertinent characteristics is based.

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c. To describe research questions that have been asked about archeological properties in the area, to discuss further questions that could be asked, and to provide guidelines for further research.

d. To identify organizations, local governments, social or enthiic groups, and individuals with historical or cultural interests in or concerns about the area, and to establish appropriate means of obtaining and taking into account their knowledge, views and comments.

e. To predict, insofar as feasible, what types of historic properties will occur within the study area and how each type will be distributed. (Historic properties include prehistoric and historic sites/contexts; based upon previous investigations, the Contractor shall not only predict but summarize and evaluate what resources have been identified).

f. Where feasible, to test these predictions against an objective body of data. (The Contractor shall discuss the objectivity of the existing data base, evaluate previous predictions, and formulate ways to test new predictions).

For the purpose of this contract, points a and b will largely constitute the Overview Component of this project. Points c, d, and e will be addressed in the Management Plan Component. Point f will constitute the sample testing component.

PART I - Section C, Description/Specification (Continued)

5.2 The Overview shall set forth what is presently known about cultural resources in the study area using tables, site summaries, and maps. Site summaries will be in a format created by the Rock Island District (Exhibit 4), unless the successful Contractor negotiates another format as work progresses and a better concept evolves. Site locations will be plotted on U.S.G.S. Quadrangle maps as well as on project maps which will be provided by Rock Island District.

5.3 The Overview will critically evaluate the existing data base and interpretations thereof. Particular emphasis should be placed upon any problems with sampling bias in previous surveys and testing programs which will affect work under this contract. Overall field methods of previous investigations and the quality of existing descriptions/analyses for sites/contexts and site assemblages will be evaluated.

5.4 The Contractor will reexamine all or a sample of site assemblages as required to provide interpretations which reflect recent advancements in Iowa and Midwestern cultural resource studies. Outdated existing literature will be evaluated and reinterpreted as necessary. Assemblages which are critical to the Management Plan's research objectives and to the research design of the Contractor for testing must be reexamined. The accurate identification and analysis of lithic, ceramic, and floral/faunal remains is considered an essential element of the Overview. Coordination with Rock Island District will insure that the Contractor will have access to all site collections. The specific arrangements for this process, however, will be left up to the Contractor and the current repository. Proposals for the temporary transfer of collections or portions thereof will be acceptable to the Government. Final disposition of borrowed collections will be made after completion of the contract by Rock Island District after soliciting recommendations from the Iowa State Historic Preservation Officer. The majority of the site collections from Saylorville Lake are presently stored at Iowa State University in Ames.

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Management Plan Component

5.5 The Contractor shall develop, in two stages, a project-specific Cultural Resources Management Plan which articulates RP3, PIC, and AS concepts for application to Saylorville Lake, Iowa. The result will be a separately bound document which contributes to Iowa's statewide RP3 planning process as well as Rock Island District's resource management objectives. The CRM plan will also be utilized for the Section 106 compliance process as it will help establish endemic project-specific criteria of significance within the overall statewide RP3 framework and Title 36 of the Code of Federal Regulations (Parts 63 and 800). Previous work at Saylorville Lake, primarily by Iowa State University (Gradwohl; Osborn) and Luther College/Southwest Missouri State University (Benn & Bettis 1981; Benn & Harris 1982), can be used for study unit development.

5.6 The stage 1 CRM plan will be created on the basis of the Overview and initial input from the Principal Investigator responsible for a separate but concurrent geomorphological/stratigraphic study at Saylorville Lake. The Stage 1 preliminary plan will be drafted prior to beginning substantial field efforts because the directions these investigations take should be, at least in part, defined by the plan. Once the field work is completed, Stage 2 revisions will be made prior to submission of draft reports for external review. Thus, the Stage 2 draft plan will incorporate the results of the Sample Testing Component and include all relevant interpretations precipitated by the geomorphological study.

5.7 The Contractor shall be required to coordinate a draft of the Stage 1 plan with the Contracting Officer and the Iowa State Historic Preservation Officer prior to initiating fieldwork. This will insure that all interested parties are appraised of the nature and scope of the CRM plan, and recommendations for fieldwork to be performed under this contract. The Contractor should consider submitting the draft and final plans in a looseleaf notebook format to facilitate updating and revision. The Contractor must note that the Saylorville Lake project is currently operating and that the management plan will have to be tailored to account for this. Major operation factors that will have to be considered are: erosion monitoring; potential pool raises; recreational development; conservation/preservation objectives; natural resource management activities; hydropower development; and leasing/outgranting (i.e., agricultural leases, recreational leases, and wildlife management by Iowa Conservation Commission).

5.8 The Cultural Resources Management Plan will be a dynamic document that can serve as a sound basis for determining the treatment of historic properties at Saylorville Lake. Furthermore, any predictive geomorphological or cultural models generated or refined as a result of accomplishing the requirements of this contract should be described in terms of sampling procedures, assumptions, and the data upon which predictions are based. Any models developed or incorporated by reference shall be firmly rooted in furthering Iowa's RP3 development and any PIC/AS level applications used for the CRM plan.

PART I - Section C, Description/Specification (Continued)

5.9 With subsections 5.5 through 5.8 in mind, the following points apply equally to both stages of CRM Plan development:

a. The CRM Plan shall describe appropriate research questions (past and future) given the nature of the existing data base. Such research questions might include settlement/subsistence systems, lithic and ceramic technologies, intro- and interregional relationships between similar or disparate archeological/geomorphological contexts, current land management practices and effects upon the cultural resource base, and methodological approaches to research within reservoir projects.

b. The CRM Plan should predict (identify) what types of archeological sites will (do) occur within the study area and how they are distributed. The Contractor should critically examine the current emphasis on individual archeological sites and consider the incorporation of a 'context' approach in which a limited number of key physiographic/geomorphological contexts for archeological sites are identified. The context approach to assessing site potentials and the quality of preservation in a region appears to be better suited to National Register oriented management practices.

c. The CRM Plan must synthesize the results of the geomorphological/stratigraphic study (to be run concurrently under a separate contract) and integrate these results with the project Master Plan objectives. A copy of the current Master Plan, or draft thereof, will be made available to the successful Offeror.

PROPOSAL

OVERVIEW, MANAGEMENT PLAN & TESTING OF ARCHAEOLOGICAL RESOURCES

SAYLORVILLE LAKE, IOWA

DACW25-84-R-0033

CAR-627

David W. Benn

principal investigator

Center for Archaeological Research

Southwest Missouri State University

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14 May 1984

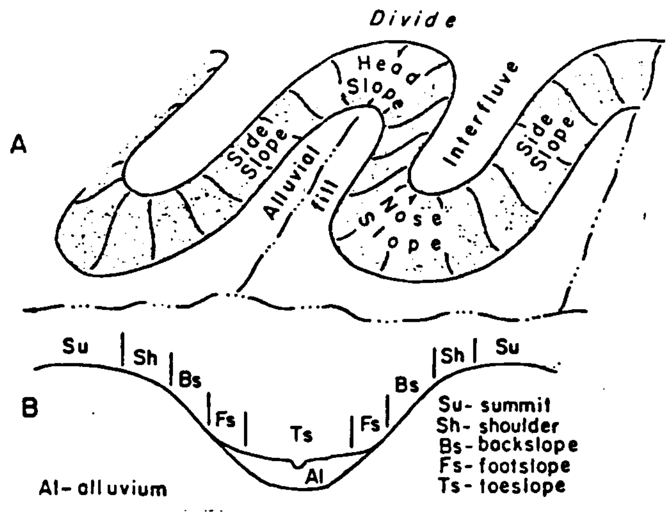
This is a proposal for archaeological investigations in Saylorville Reservoir, Iowa. The work will include an evaluation of previous investigations, an overview of the culture history of the region, a management plan for the reservoir and impacts on cultural resources and testing of the cultural and geomorphic models. In presenting this proposal we agree to fulfill all criteria stipulated in the "request for proposals." All investigations will conform to the guidelines of the Office of Historic Preservation, Des Moines.

Needs

The principal purpose of the investigation is to place prehistoric and historic cultural remains in their proper natural context (i.e. landscape position) and in a context of regional cultural development so that the events and trends of culture history can be described and explained. Only after the culture history has been explicated, can an effective management plan be developed. There are five categories of needs that must be covered in the Saylorville investigations.

1) Landscapes. The entire Saylorville locality must be viewed as an open geomorphic system where the landscape is undergoing constant modifications due to erosion and sedimentation. This means that the upland summits and hillslopes are considered with the terraces in determining the complex processes of change that have affected and will be affecting archaeological sites. We need to apply models of hillslope development (Ruhe and Walker 1968) as well as models of terrace building (Bettis and Benn 1984) to the problems of site context and preservation. A model of terrace development has been implemented downstream in the Saylorville locality, and this model will be carried upstream from the dam. The model of hillslope development that will be applied to archaeological problems is from Ruhe and Walker (1968), and it is depicted on the next page. This is a process-form model delineating three landforms: hilltop summits tend to be relatively level, stable and "older"; convex shoulders

and linear backslopes tend to be eroded and "younger"; and concave footslopes are depositional positions. These landforms can be traced on contour maps, and their formation processes can be anticipated; therefore, they have obvious utility in categorizing and predicting conditions of site preservation. Furthermore, the youthful age (<14,000 years) of the Saylorville landscape provides a baseline against which all subsequent landform modifications of the hillslopes and of terraces can be measured in terms of relative and absolute dating and rates of change.



Geomorphic components of hillslope (Ruhe & Walker 1968)

The formulation of a landscape model of hillslope and terrace processes provides a wholistic model for generating predictions about site location (i.e. burial), site age and degree of preservation. The model can be compared to other geological sequences to tie regional geologies and cultural sequences together: for instance, to relate to the upper Des Moines valley geology (Bettis 1981), to the central Missouri River basin (Hoyer 1980; Bettis and Thompson 1982), and to the Illinois River valley (Hajic 1982). The model also will be employed to predict the effects of shoreline erosion on various types of sedimentary deposits (see the IGS geomorphology contract proposal).

2) Analyze Assemblages & Sites. There is a pressing need to analyze diagnostic materials in existing site collections so that typologies of regional significance are developed. Some 450 known sites in the Saylorville locality contain cultural material representing all ages, some of it associated with absolute dates and every site having a specific landform context (data available in many reports of the ISU Archaeological Laboratory and in existing collections). In this data base there is opportunity to develop models of settlement patterns and assessments of information gaps in the cultural sequence. But, the mass of existing data must be organized into conceptual patterns by

applying typologies to chipped stone, ceramics and site types (functions). The chipped stone typology (see Appendix A) should focus on morphological characters, which are separate from functional categories. The typology for point/hafted bifaces (i.e. projectile points) and ceramics should reflect regional stylistic patterns by naming new local types rather than borrowing type names from distant regions. Finally, prehistoric site functions should be defined more precisely and related to landscape position so that settlement patterns may be investigated. Historic site functions should be related to the much larger context in which they functioned: i.e. the pioneer and merchantile economies of the midwestern Unites States.

3) Cultural sequence & culture process. We recognize a need to supplement the existing RP3 document (Henning 1982 in revision) by analyzing the cultural processes responsible for the cultural sequence that is the framework for the study units in RP3. Processes of culture change in the Saylorville locality must be analysed by investigating the nature and organization of community patterns in individual sites (cf. the approach in Bareis and Porter eds. 1984), by comparing the local cultural sequence with other regional sequences to implement a cross-cultural approach (e.g. for eastern Iowa, Logan 1976, Benn 1979; for southern Iowa, O'Brien, Warren and Lewarch 1984; for western Iowa, Benn ed. 1981; for northern Iowa, Tiffany ed. 1982) and by considering the cognitive aspects of culture that dominate the daily existance of simple societies (cf. Hall 1977). By adding the dimensions of comparison, process and cognitive meaning to the Saylorville archaeological data, we can generate explanations of culture change that are the heart of "criteria of significance" in management documents.

4) Evaluate existing data base. After the landscape has been analyzed, the collections typed classified and a model of culture process developed, it will be possible to evaluate the existing data for its gaps and shortcomings. The landform model coupled with site location and function data makes it possible to identify biases in site location strategies of past archaeological work and to specify what categories of site data are missing because of landscape evolution. Having typologies and regional comparisons between types opens the opportunity to pinpoint gaps in the cultural sequence and instances were insufficient data are available to complete typological definitions. Additionally, criteria used to define site significance in past investigations can be reconsidered for the insight that might be gained in developing the Saylorville management plan.

5) Prioritize research. All of the Saylorville Lake archaeological investigations must be viewed as having encountered a small part of the total site population in the locality. Many sites have been destroyed by natural processes and human modifications, and both of these processes are inevitable. Many sites are preserved still, and the information

contained in many of the sites is duplicated; i.e. categories of sites contain relatively the same information because they had the same function in the same cultural period in the past. It must be assumed that few sites are unique and that information obtained from one site often applies to many others within a category both inside and outside the study area. Since funds for archaeological research are finite, the prioritization of research questions and goals is unavoidable. Investigations should be prioritized to deal with: unique sites of local, state or national significance; the resolution of data gaps; defining the parameters of "missing" data (i.e. eroded landscapes and sites); salvaging "threatened" categories of data or sites (i.e. ones marked for inevitable erosion); forthcoming or planned impacts.

Methods

Many of the methods for the project are outlined in the "request for proposals," and these procedures will be employed in our work plan. Additions to the research design are described below.

The first 74 days of the project will be given to examining the data base and formulating the Overview. A literature search will be done, and historical archives will be reviewed. All of the extant collections will be examined, and selected site collections will be removed to the Center for Archaeological Research for intensive analysis. The examination of collections will be coordinated with personnel from the ISU Archaeological Laboratory so that unpublished data is not overlooked. At the same time coordination with the geomorphology contractor will be initiated by reviewing the landform model and assisting in the selection of study areas for both geomorphic and archaeological investigation. Since the geomorphology study is expected to focus on probing transects across critical locations in the Des Moines valley, such as wide and narrow reaches of the river, we will assist in selecting transects that include archaeological resources with information that answers the priority research questions. The landform model also will be implemented in the first stage of the project. This will involve tracing each landform on (5 ft.) contour maps, measuring acreage with a planimeter and mapping known sites on landforms. Information about landforms, site locations and relative ages of landscapes and cultural materials will be shared between the archaeologist and geological contractors so that the research effort is coordinated in every way.

The Overview phase of the project will be underway at the same time another contract, site testing in Saylorville recreation areas, is done. Since the Center for Archaeological Research has bid this work as well, if awarded to CAR it is assumed that information from the testing (which also employs the landscape model) will be integrated into the Overview and

Management Plans. Indeed, the recreation areas testing will provide important "reconnaissance" level information on archaeology and geology models and interpretations for the entire reservoir.

The draft Management Plan, to be developed during the next 60 days, will be a "loose-leaf" framework that can be critiqued and modified after discussions with state and federal officials involved in planning. The Plan will include a systematic review of culture history in the project area, and this history will be integrated in a regional context. The landscape model will be presented in preliminary form for the purpose of integrating site data with geomorphology. Results of the landscape modeling will be presented as a basis for assessing reservoir impacts on sites and as a means of predicting site locations and conditions of preservation. The landscape model also will provide the framework for predictive sampling in the testing phase of the project. The stage I Management Plan is envisioned to be a wide ranging document filled with alternative plans, varying interpretations, selected strategies that have proven utility and doses of speculation about things that are still unknown and untested.

The sample survey/testing portion of the contract will be geared to resolve prioritized questions in the management document, which obviously is not written yet. In general, the survey/testing will focus on resolving broad problems of site context and preservation and of use of the landscape by prehistoric and historic peoples. This means that certain categories of information will be sought: locating and testing buried sites, collecting biological remains (i.e. faunal and floral remains), authenticating previous site records, obtaining stratigraphic records from critical sites in context, recording rates of site destruction due to reservoir activities, collecting samples for dating.

The methods and goals of survey/testing will be individually designed for each research question. Here are some potential research problems and methods of investigation.

-item: The locations and geomorphic context of Early and Middle Archaic sites. These sites probably were consistently destroyed or buried by fluvial activities in the valley. Their locations must be systematically plotted from previous survey work, and transects of the terraces and alluvial fans must be systematically surveyed and probed by drilling and/or machine trenching to search for sites of these cultural ages. For this work valley transects would be positioned in the Downstream Corridor and north of the normal impoundment pool of the reservoir. Additionally, we might search for buried components at locations of later, more extensive cultural activities (e.g. 13BN30, Boone village), if we assume that there are a few "prime" locations for human occupation that existed for millenia. In some instances alluvial fans would be trenched to search for deep

deposits, while terrace locations could be tested by hand excavation (1-2m depth).

-item: Middle and Late Archaic typologies. Sufficiently large collections of materials from these types of sites must be obtained for the development of the cultural sequence and for regional comparisons. Small block excavation (2x2m, 3x3m) on two or more selected sites would fulfill this need.

-item: The contemporaneity of Late Woodland, Great Oasis and Oneota. This is a major question for the entire Prairie Peninsula subarea, and it can be resolved in the Saylorville locality where all 3 cultures are represented. The Overview should produce settlement patterns for the 3 cultures, and testing of selected sites to obtain datable material and assemblage composition should provide the data to deal with the question of contemporaneity. Some of this testing will be deep probing (e.g. buried Oneota sites), but most of it will consist of excavating transects (10-20m intervals) of shallow 1m units to locate cultural material and features in place.

-item: Community patterns: We are interested in community patterns not only for anthropological reasons but also because we need to assess the significance of partial site destruction (i.e. what is the value of preserving part of a site). The intra-site patterning of selected culture periods can be investigated by building on previous work. For instance, several sites on upland summits (in recreation areas) will be tested in 1984, and intensive testing of isolated components within these large sites would allow of intra-site comparisons. This type of testing would require clustering of 1m excavation units within blocks that encompassed whole components--the number and pattern of the test units being determined by selecting a 10% randomized sample and by the proposed magnetometer survey (see proposal for testing in recreation areas). Another example of testing community patterning would be supplementing the work on 13PK407, the Christenson Oneota site. Here, house distributions throughout the site (in the woods) could be revealed by excavating a line of test units across the terrace to identify the blank areas between house floors. Community patterning could be studied on the Boone village site (13BN30) by following the work of ISU personnel (Osborn and Gradwohl 1982). They suggested pursuing block excavations near the terrace scarp, and additional small blocks placed across the site would enhance knowledge of Middle Woodland habitations in the central Des Moines valley. Small blocks (2x2m, 3x3m) would be excavated by hand, while larger blocks would require the removal of plowzone by machine.

-item: Survey of impacted sites. A survey of selected transects of the Saylorville pool should be made to assess the range and degree of site destruction resulting from pool management. Some of this data is available (Emerson et al, 1983) or will be created by the geomophological work, but it must be systematized by sampling several dozen affected sites. This would involve

surveying reaches (1-3mi) of shoreline in all portions of the reservoir and visiting recorded sites.

General methods of the survey/testing fieldwork will include the following. Pedestrian survey of transects will be at 10m intervals. The shoreline survey would be conducted in a single transect. Tested sites will be gridded (20-30m intervals), and a permanent datum will be established or relocated. Surface collecting, shovel-testing or excavations will be organized within the grid so that artifact concentrations can be identified. Excavated soil will be passed through one-quarter inch mesh hardware cloth. Excavation will be by arbitrary 10cm levels within natural stratigraphy and will be carried to the C soil horizon or into and through buried soil horizons. Soil samples will be collected from features for processing by flotation and fine screening. Written and photographic records will be maintained in all field investigations.

Cultural material will be processed and catalogued at the Center for Archaeological Research and will be boxed for storage. The collections can be returned to ISU or some other repository, or they can be currated at CAR.

The report (Overview, Management Plan, test results) will be compiled in loose-leaf form until it is ready for final printing. The report will be authored by the principal investigator.

Personnel & Scheduling

The principal investigator of the project will be David W. Benn (see vita). He will conduct the literature search, analyze collections, oversee all fieldwork and author the reports. Benn can identify floral and faunal material obtained from the project. He will be responsible for the monthly progress reports and for coordinating with the geomorphic contractor. The Center for Archaeological Research will maintain all financial records for the project.

The crew chief who will assist in the testing will be one of two individuals, depending on scheduling. David G. Stanley (Highlandville Cultural Resource Center) or Jack Ray (CAR; see vitae) will fill this position. The field crew will consist of experienced excavators.

Radiocarbon and/or thermoluminescence determinations will be by Beta Analytic (Coral Gables, FL). Site sampling and dating will be coordinated with the geomorphic contractor.

We are prepared to adhere to the proposed contract period as outlined in the "request for proposals." Only one potential delay in this schedule is foreseen. Testing may occur in late fall when the uncertainties of weather could halt operations for the winter.

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Project Review Comments

Type: Concept: ■ Final: □ Other:______ □

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Date: ________

Project: Cultural Resources Overview
Location: Saylorville Lake, IA

Reviewer:
Name: C. Smith
Organization: USACE Rock Island

Comment Number	Drawing/Page/ Number	Space	Comment	Action
1	p. 29		Eventually, the District would like to tackle a synthesis which would include data from Coralville Lake, Lake Red Rock, and the Mississippi River to address the problem of cultural development for the central Midwest and to begin bridging the gap between the eastern woodlands and the plains, the Great Lakes and the mid-south.	
2	Gen		It would be useful to prepare a map of survey and testing coverage of previous work keyed to type of study, methods, and general results.	
3	p. 6		"Concurrently" appears as "and currently" in the middle paragraph.	
4	p. 9		Would "exterminated" be better than "extirpated"; "cottonwood" is misspelled.	
5	p.18		According to staff who were at the Rock Island District during the late 1970's, the MOA was as much a COE initiated document as anything, done to clear up numerous problems/conflicts with determining funding needs, for clarifying compliance needs, for controlling archeological contractors performing inadequate or unnecessary work, and for letting the District know preceisely what was required under the law. Records show that neither the contractors nor the professional community could provide clear-cut guidance on the issues involved. In those days, the District suffered under a "trust me"	

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Organization: ____

Comment Number	Drawing/Page/ Number	Space	Comment	Action
			philosophy by archeological contractors. There	
			was little sincere dialogue on what was being	
			done, why actions were taken, and how continued	
			requestes for funds were justified other than	
			in reactionary and adversary tones. In fact,	
			the contractor performing the Saylorville work	
			refused to turn in professional proposals or	
			research designs until about 1980, and this one	
			example done under duress was so miserable that	
			a SHPO archeologist had to rewrite the document	
			and generate the six supplementary research	
			questions as an emergency remedy. During the	
			1964 to 1978 period, NCR did not have an arch-	
			eologist on staff (admitted, they should have).	
			The SHPO refused to provide a list of qualified	
			and acceptable contractors to do the work; hence,	
			until about 1980 only one contractor was made	
			available to the District.	
6	p.28		"Prioritize Research" may be better stated as	
			Prioritize Evaluation/Mitigation Efforts.	
7	p.31		Change "Paleo-Man" to 'Paleo-Indian'.	
8	p.33		Why are Paleo and EA sites more frequent in the	
			Upper Skunk River Basin? Were the smaller	
			basins recovering more rapidly from terminal	
			Pleistocene floods and then the later hypsithermal	
			drying episodes?	
9	p.38		Change "Meron" to 'Merom'.	

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Reviewer:

Name: ______________________

Organization: ______________________

Comment Number	Drawing/Page/ Number	Space	Comment	Action
10	p.42		How does your perception of EW McBride pottery compare with the Prairie Phase ceramics for the Tri-State area (IL, IA, WI)? Sandy pastes and grit temper (lg. angular and rolled) combined with incised-over-cordmarked surface treatment are much the same over a broad area of the Midwest. Theler's dissertation on EW subsistence may be of use, as would Overstreet's work for Missi-ssippi River pools 10-12.	
11	p.43		Overstreet has noticed a similar pattern for Woodland sites at Coralville Lake. Last line, 2nd paragraph -- "Storaging"?	
12	p.45		Your discussion of significance for samples of fire-cracked rock points out a glaring deficiency in most of the previous studies.	
13	p.47		"Populus" should be 'Populous" in line 11.	
14	p.49		"receptical" should be 'recepticle' in line 22.	
15	p.49		Farnsworth recently completed work at several MW mounds -- ash lenses were noted in the centers with peripheral burials.	
16	p.50		Again (end of middle paragraph), Overstreet appears to have identified a similar pattern of EW and MW site distributions at Coralville.	
17	GEN		It would be helpful to develop a flow diagram or table of ceramic types manifested at Saylorville Lake, with diagrams/columns for the Tri-State and Illinois River Valley sequences alongside	

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Comment Number	Drawing/Page/ Number	Space	Comment	Action
			for comparative purposes. Notes on paste comp-	
			osition, decorative treatments, site/artifact	
			associations, and cultural periods/phases would	
			be of great utility to Midwestern researchers.	
			This kind of presentation would be a great aid	
			for myself and any successors who must frequently	
			try to recall what state, researcher, or chron-	
			ology applies to a given problem within the	
			District. As you know, there is great variability	
			in type names (often for the same thing) and	
			temporal assignations depending upon who you	
			ask. This kind of summary illustration would	
			help District staff pull together concepts	
			applicable to all three reservoirs, the Mississippi	
			River and the Illinois and Rock Rivers under	
			Corps jurisdiction.	
18	p.56		83940+/- 50 B.P.?	
19	p.59		Change "that" to 'than' in line 12.	
20	p.65		Line 7: change "sites, indicated the" to 'sites	
			and indicate that'.	
21	p.65		Change "Red Rocks" to 'Red Rock' in the 2nd para.	
22	p.65		Elucidate the "archaeological methodology"	
			problem for locating Oneota settlements on low,	
			alluvial terraces for those not familiar with	
			your past efforts at Saylorville Lake.	
23	p.68		Place a period (.) after "resources" in line 1;	
			delete the first half of the second line and	

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Reviewer:

Name: ______________________

Organization: ______________________

Comment Number	Drawing/Page/ Number	Space	Comment	Action
			begin the second sentence with "Documentary".	
			In line 3, replace "large" with 'substantial', and	
			insert 'these' between "with" and "written" in	
			line 4.	
24	p.68		Precisely define your understanding of "historic"	
			resources.	
25	p.68		Insert 'American' after "native" in the 2nd	
			paragraph; in the 3rd paragraph, replace	
			"future" with 'construction of'.	
26	p.69		Begin the sentence (line 4) with 'Fort Des	
			Moines' and delete "This military fort" and	
			"Fort Des Moines as written; place a comma after	
			1843 and delete "and was" in line 5.	
27	GEN		Clean-up editing is needed for the historical	
			section to tighten-up the text and to eliminate	
			unnecessary or missplaced phrases.	
28	p.70		Based upon historic documentary and archeological	
			evidence collected to date, can you be sure that	
			historic Indian occupations were sporadic and	
			temporary? Later on you state that documentary	
			and oral sources have barely been tapped and	
			that historical archeology studies are at a	
			minimum. Could this conslusion (paucity of	
			sites and small size) merely reflect sampling	
			biases, problems with burial under post-settlement	
			alluvium, and/or loss of sites due to inundation	
			and modern land use activities? If you	

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Name: ____

Organization: ____

Comment Number	Drawing/Page/ Number	Space	Comment	Action
			believe your interpretation, as stated, is correct we have no quarrel with it as long as the issues raised above are dealt with in the text.	
29	GEN		It might be helpful to separate strictly back-ground historical discussion from settlement pattern concepts. Is there a riverine-oriented dendritic settlement pattern prior to the Civil War, as opposed to a more uniform infilling along section lines and transportation routes (roads and railways) as the prairies were more intensively occupied after the Civil War? How was the Saylorville Lake area incorporated into the regional exchange system?	
30	GEN		Would any purpose be served by breaking out the "Brief History" section into topics or themes (historical background, settlement patterns, coal mining, railroading, agriculture, com-mercial development, physiographic setting, etc.)? Perhaps the history and RP3 sections could be combined with major sections being RP3 study units, and the topics listed above serving as subsections -- this might allow readers to focus in on topics of interest more easily and enable patterns of development to be seen from period to period. This is a recommendation only -- pursue whatever course of action you feel is appropriate.	

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Name: ______
Organization: ______

Comment Number	Drawing/Page/ Number	Space	Comment	Action
31	p.81		Change "Indianv" to 'Indian' in line 20.	
32	GEN		Quite often ethnic enclaves and cultural changes are reflected spatially as 1st, 2nd, and 3rd generation pioneer manifestations are influenced or contrasted by later migration waves. Is there evidence of these processes at Saylorville Lake?	
33	p.88		The evaluation of previously collected historic artifacts is perceptive. The problems mentioned concerning identification errors and haphazard application of terminologies has been assumed based upon perusal of ISU reports, but has not been verified through a collections check until now. Additional light could be shed upon ceramic classification problems by use of Majewski and O'Brien (1984 - Clarence Cannon) and Anton Till's report on ceramics from the Bonaparte, Iowa pottery (1983). Additional material culture references are included in the enclosed bibliography. These references are provided for information only as your contract did not require a detailed collections analysis. If funds become available, historic artifact and site studies will certainly be considered per your recommendation on page 89.	
34	GEN		The recommendations for archival, oral, and architectural studies are well taken. These activities may be done for Lake Red Rock and	

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Name: ____________________
Organization: ____________________

Comment Number	Drawing/Page/ Number	Space	Comment	Action
			Coralville Lake as funding is available. If	
			funds become available for Saylorville, similar	
			studies will be considered.	
35	GEN		Overall, the historic section more than ac-	
			complishes assessment and overview requirements.	
			The amount and quality of information presented is	
			commendable. The only major problem is devising	
			a way to improve the organization of the data	
			in ways which facilitate its use and readability.	
			A more effective system of section and subsection	
			designations may help in this regard. It would	
			also be helpful to see a summary table that	
			briefly describes major historic periods or	
			topics, the kinds of information available,	
			identifiable data gaps, and characteristic	
			resources expressed on the landscape. Such a	
			table could be cross-referenced to the text to	
			guide the reader to the relevant section for	
			detailed discussion. This device might ameliorate	
			some of the problems with wading through the	
			massive amount of information presented.	
36	GEN		What is the potential for the District obtaining	
			the computerized site files? If this might be	
			arranged, please call Mr. Andy Bruzewicz at	
			Ext. 203 to discuss equipment and software translation	
			issues.	

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Comment Number	Drawing/Page/ Number	Space	Comment	Action
37	p.112		Change "condensced" to 'condensed'.	
38	VI		This section would fit well with the CRMP. For the final reports, we might consider a reorganization of CRMP and Overview sections.	
39	GEN		It is obvious that the historic section was written by a different individual. Hence, the overall report is not really co-authored, but rather exhibits a situation where the author extends credit to a contributor. This, however, is up to you for treatment in the final. The major point in this regard is the very obvious contrast in style, orientation, and treatment of RP3 topics.	
40	GEN		The prehistoric text is often confusing when code designations are used along as hafted biface identifiers. Traditional type names or descriptive terms (i.e., contracting stemmed, side-notched, corner-notched, etc.) would be helpful with the code numbers in parentheses. This has already been done about half of the time. It might also be of use to include a one page summary table of code numbers and very general descriptive categories to aid readers in the narrative section. This could possibly be done by major cultural period, gross morphology, or both.	

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25 Sep 84

Great Lakes Archaeological Research Center, Inc.
Cultural Resource Management
7509 WEST HARWOOD AVENUE
WAUWATOSA, WISCONSIN 53213
(414) 259-6020

June 7, 1985

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building - P.O. Box 2004
Rock Island, IL 61204-2004

Dear Sirs:

Thank you for the opportunity to review the draft report entitled Interpretive Overview of Cultural Resources in Saylorville Lake, Iowa prepared by David W. Benn and Leah Rogers. The document represents a valuable contribution for several reasons. First, it brings together much diverse information that has been collected during the last two decades. Secondly, those data are not only presented in a concise and effective manner, but all of the previous work is evaluated with a discussion of strengths as well as limitations.

The cultural-historical reconstructions are quite readable and effectively cover a vast body of information. More importantly, particularly for the earlier prehistoric manifestations, cultural periods are integrated within the framework of a landscape evolution model. In addition, explanations for various site distributions, settlement and subsistence models are presented in terms of socio-cultural and well as ecological variables.

In summary, the overview is comprehensive, well written, and, once complemented by the pending management plan and geomorphological overview, will serve as an effective guide to researchers, resource managers, and planners. The following minor comments are offered for consideration.

p. 8 Climate: this section is of limited utility. Perhaps it could be placed within the following section as a preface to a table or other brief summary of Holocene climatic episodes as they are now understood.

p. 13-26: I find this section particularly useful although it may be lengthy for some readers. Perhaps a tabular format listing strengths and weaknesses of previous investigations would be useful to readers less interested in theoretical or methodological orientations.

pp.30-40: The stated correlation of sites-landforms-chronology is very likely the most important contribution this overview makes.

pp.40-43: Do we really need another type description for incised over cordmarked ceramics? I find it difficult to resolve the inclusion of Fox Lake Ware but the omission of Dane Incised and Prairie Incised. Theler's dissertation might be useful for a discussion of E. Woodland settlement-subsistence.

p.94: The comments relating to archival research are particularly poignant--we find the same omission for earlier work at Coralville Lake.

p. 119: I agree that predicting site densities on a volume basis is critically important. In many cases archaeological survey focuses only on two dimensions with little consideration given to buried landscapes. However, it is not clear to me what kinds of techniques will be employed to provide a realistic appraisal of site densities in a three dimensional matrix.

Certainly these comments are minor and in no way detract from the report which clearly meets the scope of work. Finally, the work will provide clear direction to preserving and conserving what little remains of the archaeological data base at Saylorville Lake. Thank you for this opportunity.

Sincerely,

David F. Overstreet

David F. Overstreet, Ph.D.
President

DFO/nw
cc: Dr. David W. Benn

IOWA STATE HISTORICAL DEPARTMENT
OFFICE OF HISTORIC PRESERVATION

ADRIAN D. ANDERSON, Executive Director
STATE HISTORIC PRESERVATION OFFICER

June 24, 1985

Mr. Arthur J. Klingerman
Chief, Planning Division
Rock Island Corps of Engineers
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

RE: INTERPRETIVE OVERVIEW OF CULTURAL RESOURCES IN SAYLORVILLE LAKE, IOWA, PROJECT CAR-627

Dear Mr. Klingerman:

Thank you for the opportunity to review the above referenced document. The report meets the specifications outlined in the COE scope of work, and is an excellant planning document. Points which need to be clarified in the final report are listed below.

p. v. The phrase "laundry list" is a derogative one and belittles your own hard work in delineating possible research topics in Section VI.

p. 4. The introductory paragraph should include the date the dam was built.

p. 5, Fig. 2. Source is omitted.

p. 13, line 2. 44 is an exact number not an approximation.

p.13, 3rd paragraph. Is the "Des Moines Museum" the present State Historical Museum?

p.14, 2nd paragraph. The proper citation is the Office of Historic Preservation, not the Division.

p. 14, 5th paragraph. Is "spuriously" (meaning false, a forgery) the proper word choice? Do you mean to imply intentional deceit by McKusick or just that he was incorrect?

p. 18, 1st paragraph, last sentence. This should read "a draft nomination ... was prepared .... The property was considered not eligible for the National Register by the Office of the Historic Preservation and by the COE planning staff ...."

p. 19, last paragraph. Gradwohl and Osborn 1975 a or b?

p. 23. Omit ( ) around Broihan annotation.

p. 28, ist paragraph. Holistic is the preferred spelling.

p. 31, 3rd paragraph. Site 13BN265 is listed as 165 on Fig. 5 and on p. 33. Which is correct?

p. 33, last paragraph. The text says there is only one EA site (13BN225), but two are plotted on Fig. 5 (225 and 111).

Figs. 6 - 14. Site numbers are in many cases too far from the dot, some sites appear to be unnumbered (see especially Fig. 6), and in general it is very difficult to find sites on these maps. Fig. 5 was the most readable.

p. 38. 2nd paragraph. Inventory, not investory.

p. 40/113. How are the 17 unspecified Archaic sites listed in Table 3 accounted for in the Early-Late Archaic text and Figs. 5-6?

p. 45, 2nd paragraph. "Second .T. " - are there missing words?

p. 45ff. The text does not explicitly state how many MW sites were found. The legend for Fig. 9 lists "029 High Bridge Ware ..."; this is unclear. Is this a reference to the Boone Mound Group?

p. 56, 1st paragraph. The number of ELW sites should be mentioned.

p. 56, 2nd paragraph. The number of all LLW sites should be mentioned, as well as what percentage of them are considered Great Oasis.

p. 65, 1st paragraph. Are all the Oneota sites of the Moingona-Burlington phase? Table 3 reports 15 sites, 7 with (only?) pottery. This is not discussed in the text.

p. 67, last pargraph. Shouldn't some discussion of McKusick's claims for Fox sites be here?

p. 67. It would be useful to have part of Table 3, especially a tally of occupation by period, inserted and summerized at this point.

p. 68, line 2. Fact not facts.

p. 69, last paragraph. The OSA site number for the Chesterfield Grave site should be included. An additional reference for this site you may wish to cite is: Holland, Thomas D., nd, Osteological Analysis of the Chesterfield Cranium, Number 2829. Unpublished manuscript on file at the OHP.

p. 69-70. A map of known and presumed early settlements mentioned in the text would be an aid to the reader.

p. 110. This section dramatically emphasizes how important it is for an archeologist specifically trained in historic archeology to be the one analyzing and interpreting historic sites.

Chapter VI. This chapter is a crucial precursor to the Management Plan, and might be best combined in a single document in the final report.

Thank you for the opportunity to comment. We look forward to reviewing the final report.

Sincerely,

Adrian Anderson, Executive Director
State Historic Preservation Office

cc: Dr. David Benn, SWMS

United States Department of Agriculture

Soil Conservation Service

Midwest National Technical Center
Federal Building, Room 345
100 Centennial Mall North
Lincoln, NE 68508-3866

July 8, 1985

Arthur Klingerman
Chief, Planning Division
U.S. Army, Corps of Engineers
Clock Tower Building, P. O. Box 2004
Rock Island, IL 61204-2004

Dear Mr. Klingerman:

The opportunity to review and comment on the referenced draft report is appreciated. Generally, the work is of refreshingly high quality; some sections are, however, weakly developed. This is the first opportunity for me to review a report of this nature which tries to utilize a state preservation plan, albeit in draft form, as a framework for examining a very extensive body of information in detail and meet a broad range of research and management goals so often regarded as incompatible. This is a fine piece of work.

Specific comments are attached. If you have questions regarding any of the comments, please feel free to contact me. I look forward to future opportunities to review work of this nature from the Rock Island District.

Sincerely,

R. Stanley Riggle

R. STANLEY RIGGLE
Cultural Resources Specialist
Economics, Social Sciences,
and Evaluation Staff

Attachment

cc:
Clinton Russell, Head, Economics, Social Sciences, & Evaluation Staff, MNTC, SCS, Lincoln, NE

Comments: draft "Interpretive Overview of Cultural Resources in Saylorville Lake, Iowa", prepared by Dr. David W. Benn and Ms. Leah Rogers, Contract DACW25-84-C-0035.

by R. S. Riggle, Cultural Resources Specialist, ESSE Staff, Midwest National Technical Center, SCS, Lincoln, NE.

July 2, 1985

1. This review did not include a thorough clerical editing, however typographical and (or) grammatical errors appear minimally on the following pages; paragraphs are also noted:

Page no.	Parag. no.
26	1
60	4, line 8; "southwest" should be western.
112	4, line 2
114	2, first sentence
117-122	numerous typographical errors.

2. page 18, paragraph 2.

This paragraph discusses the MOA and its amendments. In part the author "reads between the lines of the MOA". It is probably not necessary to be oblique about the purpose of the MOA; the sentence captures fairly well the purpose of such an agreement. However, the MOA constitutes the comments of the ACHP, and was obtained through a then-evolving review process. The Corps seems to have been following the process so it does not appear necessary to state the MOA was to "bring them into compliance", when they appear to already have been in compliance, or were persuing that goal with some degree of progress.

3. page 20, paragraph 1.

The last sentence of the paragraph takes whatever friction existed between COE and ISU out of context and inadvertently implies the one year lapse in contracting was more or less responsible for whatever else happened afterwards. A number of things, including the lapse in formally contracted obligations, (see below in this comment) contributed to the friction, although in retrospect its role was probably minor.

The relevant sentence should be changed to indicate that several factors contributed to the friction.

Also, it is probably worth noting that a government-wide shift from noncompetitive to competitive contract procurement was occurring at the time of the alledged lapse in formal contracting. As I recall this had a major effect on the length of time when no formal contract existed. Also, I vaguely recall that an existing contract was amended to cover monitoring of the shore line erosion. It was limited to this because there was no construction scheduled which would be affecting sites.

4. page 21, paragraph 4.

The discussion beginning at the bottom of page 21 and carrying over to page 22 reflects on possible differences between the intent of the terms "mitigation" and "testing" as interpreted by the COE and their contractor at the time Stage 3 work was beginning at Saylorville. This seems to be a case of semantics. The work was "mitigation" becuase it was conducted during operations. The practice of 'testing', with the intent of obtaining information necessary to define the nature and scope of larger scale excavations (data recovery, or 'mitigation'), and to evaluate whether data recovery should be conducted, was then and, most unfortunately, still often is part of "mitigation" or "data recovery". It was intended that mitigation, or data recovery, or whatever one wants to call the lessening of impacts, would have been conducted if at the time a "Priority I" site was demonstrated to merit additional archeological work.

I think paragraphs 4 and 5 on page 21, and the remainder of paragraph 5 at the top of page 22, could be deleted. The difference in terminology, "testing" versus "mitigation" could be noted in a parenthetical statement in the present second paragraph on page 22 (beginning "The Stage 3 report...").

5. pages 13-26 (Chapter II) and Chapter III.

Paragraph 1 indicates in part that the discussion of previous archeological work in the project area is arranged in chronological periods to facilitate analysis of the research. However, the chapter is descriptive, not analytical. This chapter appears to be intended to fulfill specification V(b) of the scope of work. This may be a false appearance because Chapter III could also be the evaluation of the quality of previous work. Both chapters together may be the springboard for addressing specification V(c).

Chapter II reads like a descriptive list. Chapter III is only minimally developed. It may be easier to meet the very worthwhile objectives of the Overview (specification V of the scope of work) by addressing and evaluating questions, and describing previous work and evaluating its qualities at one time, rather than as seemingly separate tasks. The scope of work describes specifications V(a) - (f) as objectives, not as separate tasks. However, the scope of work also states that specifications V(c), (d), and (e) will be addressed in the Management Plan component, and V(f) will be the sample testing component; thus implying these are separate tasks. I think it is extremely difficult to evaluate the quality of existing knowledge separate from the questions which influenced the acquisition of knowledge.

6. Pages 88 and 89.

The author uses references published sometime after ISU's cataloging system was started to substantiate the claim that cataloging was sloppy. This is unnecessary; references current with the age of the system would be more appropriate. Even then, the point can be made in a sentence about the discrepancy between ISU terminology and more widely accepted terminology, with references added. Secondly, it should be determined if ISU's

cataloging practices were an attempt to create a research tool (the catalog), or if they were intended to be a "shorthand" interim device for organizing collections, and not to represent the final interpretation.

7. page 108; recommendation concerning architectural survey.

An architectural survey, even based on COE files, seems moot. The subject matter would be more germane to an historical analysis and could be subsumed under "Archival Research".

8. page 109; recommendation concerning archeological investigation of historic sites.

The last sentence of paragraph 1 of this section should be deleted; it is not necessary to justify the level of consideration given historic period resources by comparison to prehistoric archeological resources. One clearly does not justify the other, and has nothing to do with the values of the other. In fact it seems that the point the author is trying to make is that the distinction between the two data sets based on age is arbitrary. If this is the case then a common approach to both data sets is clearly warranted.

9. Page 116, paragraphs 3 and 4.

The method used to measure integrity needs to be explained. The language of these paragraphs seems to use the variable of area and (or) volume as a measure of integrity. This is clearly an incomplete use of the concept but has some obvious implications which if well-founded would be highly useful.

10. Page 122-126; Summary of Research Problems...

This section is apparently incompletely developed. The summary needs to relate more to previous sections and, where of substantive benefit to the overview, a preview of the same concerns as addressed in the Management Plan could be added.

Specific comments on these pages are:

a. The five identified needs are very appropriate and clearly stem from the overview. Specific comments are:

Need 1 - the hillslope component of site information would be a very useful tool to include in the inventory. It is almost frightening though to think of resurveying the site locations to establsih this component. Examination of air photos may be a useful way to establish slope position for many of the sites. Present site conditions are also indicated to be necessary. This would presumably be done as part of the long term management of the resources, rather than as a part of the Overview study.

Need 5 - prioritizing research is stated as a need. The present paragraph needs considerable expansion, and still most of the discussion could be reserved for the Management Plan; this is a good place for a preview of how this topic will be handled in the management plan.

b. Research questions, beginning on page 123.

These are too specific and too far removed from the context established by earlier portions of the document. The context of the questions needs also to be summarized. Also the questions need to be related to broader questions. Ask, for example, why it is important to know this for each of the questions. The answer should be broader questions and each of these would be the overarching questions of broad relevance.

c. State Plan (RP3) study units, beginning on page 124.

If I understand the rudiments of the state plan correctly, the first sentence of the first paragraph under this item is exactly the reverse of what it should be. Also, the second sentence is misleading, inadvertently so I'm sure. Firstly, "conform" in this context should be changed to "integrated". The State Plan, and studies of any specific area or study unit, would be nonfunctional if not ignored if it was expected that either must conform in detail with the other. Secondly, the State Plan, whether in the RP3 style or some other style, should of course be based on field data and analytical conclusions. The fact that the author suggests numerous changes to the State Plan study units is ample indication that the dynamic nature of the State Plan is in fact working very well; that additional work leads, as it should, to refinement of the study units.

11. Perhaps I missed a point in the scope of work, or a section of the overview document, but I was unable to find a site-wise summary of data classes. The absence of discussion of subsistence economy based on a faunal and floral appendices is conspicuous; this seems relevant to an overview document, as are terse summaries of data classes represented at each site, presented in tabular form. This may be covered by another document under this contract, or may be available in some other reference which could simply be cited.

12. Reviews of work of this nature are expected to provide some constructive criticism and thus seem to dwell on weaknesses. This report is far from weak.

Appendices A and B are significant contributions in their present form. Their uses, in conjunction with relevant sections of the text, for regional studies are obvious.

Table 4 is a wonderfully concise summary of site impacts. Table 5, described on page 122 as a "poor approximatelv" (sic), meaning poor approximation, is reflective of the paradigm shift from much previous work and is a powerful research and management tool.

The good points of this work are numerous. The tables referenced above are simply an indication of the level of effort and care which seem to characterize the work in general.

APPENDIX D

Project Area
Soil Profiles

Buckney series

The Buckney series consists of excessively drained, moderately rapidly permeable calcareous soils on bottom lands. These soils formed in mixed, loamy and sandy alluvium. The slope ranges from 0 to 13 percent.

Buckney soils are similar to Hanlon soils and are associated with Hanlon and Spillville soils. Hanlon soils are cumulic, and Spillville soils have less sand in the solum.

Typical pedon of Buckney fine sandy loam, 1 to 3 percent slopes, 420 feet east and 1,050 feet south of the NW corner of sec. 21, T. 83 N., R. 26 W.

A11—0 to 5 inches; very dark brown (10YR 2/2) fine sandy loam, grayish brown (2.5Y 5/2) dry; moderate fine subangular blocky structure parting to moderate fine granular; friable; slight effervescence; moderately alkaline; abrupt smooth boundary.

A12—5 to 12 inches; very dark grayish brown (10YR 3/2) fine sandy loam, grayish brown (2.5Y 5/2) dry; moderate medium subangular blocky structure; friable; slight effervescence; clear smooth boundary.

A13—12 to 17 inches; very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) fine sandy loam, grayish brown (2.5Y 5/2) dry; moderate fine subangular blocky structure; very friable; slight effervescence; moderately alkaline; clear smooth boundary.

C1—17 to 28 inches; brown (10YR 5/3) loamy sand; massive; loose; slight effervescence; mildly alkaline; clear smooth boundary.

C2—28 to 38 inches; brown (10YR 4/3) and dark grayish brown (10YR 4/2) fine sandy loam; massive; very friable; strong effervescence; moderately alkaline; gradual smooth boundary.

C3—38 to 48 inches; brown (10YR 4/3) and dark grayish brown (10YR 4/2) fine sandy loam; massive; very friable; slight effervescence; moderately alkaline; gradual smooth boundary.

C4—48 to 60 inches; very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) sandy loam; massive; friable; slight effervescence; moderately alkaline.

The solum and the mollic epipedon are 10 to 24 inches thick.

The A horizon has color value of 2 or 3 and chroma of 2 or 3. It ranges from silt loam or loam to loamy fine sand. The control section is less than 18 percent clay throughout. Below the mollic epipedon value is 4 or 5 and chroma is 3. Reaction is mildly alkaline or moderately alkaline.

Colo series

The Colo series consists of poorly drained, moderately permeable soils on bottom land and in upland drainageways. These soils formed in silty alluvium. The native vegetation was prairie grasses. Slope ranges from 0 to 2 percent.

Colo soils are similar to Coland and Okoboji soils and are commonly adjacent to Ely, Judson, and Nodaway soils. Coland soils have more sand in the control section than the Colo soils. The B horizon of Okoboji soils has a higher content of clay than that of the Colo soils. Ely soils have a dark grayish brown B horizon. They are on foot slopes. Judson soils have higher chroma below the A horizon than the Colo soils. They are on foot slopes. Nodaway soils are lighter colored and less clayey than the Colo soils. They are finely stratified. They are in positions on the landscape similar to those of the Colo soils.

Typical pedon of Colo silty clay loam, 0 to 2 percent slopes; 400 feet west and 250 feet south of the northeast corner of sec. 35, T. 78 N., R. 29 W.

A1—0 to 9 inches; black (10YR 2/1) silty clay loam (32 percent clay), dark gray (10YR 4/1) dry; weak medium subangular blocky structure; friable; neutral; diffuse smooth boundary.

A2—9 to 24 inches; black (10YR 2/1) silty clay loam (32 percent clay), dark gray (10YR 4/1) dry; weak fine subangular blocky structure; friable; neutral; diffuse smooth boundary.

A3—24 to 34 inches; black (10YR 2/1) silty clay loam (34 percent clay), gray (10YR 5/1) dry; weak fine prismatic structure parting to weak fine subangular blocky; firm; neutral; diffuse smooth boundary.

Bw—34 to 48 inches; very dark gray (10YR 3/1) silty clay loam (36 percent clay); few fine faint yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to weak medium subangular blocky; firm; neutral; diffuse smooth boundary.

Cg—48 to 60 inches; dark gray (10YR 4/1) silty clay loam (32 percent clay); many fine distinct grayish brown (10YR 5/2) and common fine prominent yellowish brown (10YR 5/6) mottles; massive; firm; neutral.

The thickness of the solum ranges from 36 to 54 inches. The depth to free carbonates is more than 60 inches. The mollic epipedon is 36 or more inches thick.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or less. It is silty clay loam or silt loam. The Bw horizon is neutral in hue or has hue of 2.5Y or 10YR. It has value of 2 to 4 and chroma of 1 or less. The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 3 or 4, and chroma of 1 or less. It typically is silty clay loam but in some pedons is sandy or gravelly below a depth of 48 inches.

Dickinson series

The Dickinson series consists of somewhat excessively drained soils that are moderately rapidly permeable in the upper part and rapidly permeable in the lower part. These soils are on convex side slopes on stream terraces and uplands. They formed in loamy sediments and eolian sand. The native vegetation was prairie grasses. Slope ranges from 1 to 9 percent.

Dickinson soils are similar to Ridgeport and Zenor soils and are commonly adjacent to Clarion soils. The solum and the C horizon of the similar soils contain more gravel than those of the Dickinson soils. Clarion soils have a fine-loamy control section. They are higher on the landscape than the Dickinson soils.

Typical pedon of Dickinson fine sandy loam, 1 to 5 percent slopes; 1,300 feet west and 350 feet north of the center of sec. 20, T. 79 N., R. 27 W.

Ap—0 to 7 inches; very dark brown (10YR 2/2) fine sandy loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; very friable; neutral; clear smooth boundary.

A—7 to 15 inches; very dark grayish brown (10YR 3/2) fine sandy loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; very friable; slightly acid; gradual smooth boundary.

Bw1—15 to 25 inches; brown (10YR 4/3) fine sandy loam; weak fine subangular blocky structure; very friable; slightly acid; gradual smooth boundary.

Bw2—25 to 36 inches; dark yellowish brown (10YR 4/4) loamy sand; single grained; loose; slightly acid; gradual smooth boundary.

BC—36 to 42 inches; yellowish brown (10YR 5/4) loamy sand; single grained; loose; slightly acid; gradual smooth boundary.

C—42 to 60 inches; yellowish brown (10YR 5/6) sand; single grained; loose; neutral.

The thickness of the solum ranges from 24 to 50 inches. The thickness of the mollic epipedon ranges from 10 to 24 inches.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It is fine sandy loam or sandy loam. The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It is fine sandy loam or sandy loam in the upper part and grades to loamy sand or loamy fine sand in the lower part. The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6.

Dorchester series

The Dorchester series consists of light-colored soils on bottom lands. The soil material is recently deposited sediment. Many areas are subject to frequent and damaging floods. In some areas these soils border Huntsville and Nodaway soils.

These soils are potentially productive, but, to varying degrees, they need fertility improvement and flood protection. Generally, they are weakly to strongly calcareous (alkaline), but in a few areas they are neutral.

Some areas of Dorchester soils are in corn and soybeans, others are in pasture, and others are in unmanaged woodland used only for wildlife.

Dorchester silt loam

A_1 0 to 7 inches, very dark gray (10YR 3/1) and some dark grayish-brown (10YR 4/2) silt loam; very weak, fine and medium, granular structure; friable; calcareous.

A_1–C_1 7 to 20 inches, dark grayish-brown (10YR 4/2) silt loam; some light coatings of very dark gray (10YR 3/1); very weak, medium, granular structure; friable; calcareous.

C_2 20 to 60 inches, dark grayish-brown (10YR 4/2) and grayish-brown (10YR 5/2) silt loam; common, coarse mottles of pale brown (10YR 6/3); massive; very friable; mildly alkaline (calcareous) to neutral; common, thin lenses and pockets of fine sandy loam.

Hayden series

The Hayden series consists of well drained, moderately permeable soils on upland ridges and side slopes. The soils formed in loamy glacial till. The slope ranges from 2 to 50 percent.

Hayden soils are similar to Lester soils and are commonly adjacent to Luther soils on the landscape. Lester soils have a thicker, darker A1 horizon. They have a weak A2 horizon, if one is present. Luther soils have colors of lower chroma in the B horizon and are on nearly level ridgetops.

Typical pedon of Hayden loam, 2 to 5 percent slopes, 1,164 feet west and 2,405 feet north of the SE corner of sec. 30, T. 85 N., R. 26 W.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; discontinuous black (10YR 2/1) coatings on peds; weak fine angular blocky structure parting to weak very fine granular; friable; neutral; clear smooth boundary.

A21—2 to 5 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; discontinuous very dark grayish brown (10YR 3/2) coatings on peds; moderate thin platy structure; friable; slightly acid; clear smooth boundary.

A22—5 to 10 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; discontinuous very dark grayish brown (10YR 3/2) coatings on peds; weak medium platy structure parting to weak fine subangular blocky; friable; discontinuous gray (10YR 6/1) very fine uncoated sand grains on faces of peds; slightly acid; clear smooth boundary.

B1—10 to 14 inches; dark yellowish brown (10YR 4/4) loam; discontinuous dark grayish brown (10YR 4/2) coatings on peds; weak medium angular blocky structure parting to moderate medium subangular blocky; friable; discontinuous gray (10YR 6/1) very fine uncoated sand grains on faces of peds; slightly acid; gradual smooth boundary.

B21t—14 to 21 inches; dark yellowish brown (10YR 4/4) clay loam; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium angular blocky; firm; discontinuous gray (10YR 6/1) uncoated sand grains on faces of peds; discontinuous moderately thick dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; medium acid; gradual smooth boundary.

B22t—21 to 27 inches; yellowish brown (10YR 5/4) clay loam; few fine distinct red (2.5YR 4/8) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; discontinuous gray (10YR 6/1) uncoated sand grains on faces of peds; discontinuous moderately thick dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; medium acid; gradual smooth boundary.

B23t—27 to 33 inches; yellowish brown (10YR 5/6) clay loam; few fine prominent yellowish red (5YR 4/8) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; discontinuous moderately thick dark yellowish brown (10YR 3/4) clay films on faces of peds; black (10YR 2/1) organic stains on peds; common manganese concretions; medium acid; clear smooth boundary.

B3t—33 to 42 inches; light olive brown (2.5Y 5/4) loam, weak medium prismatic structure parting to moderate medium subangular blocky; firm; discontinuous thick very dark grayish brown (10YR 3/2) clay films on faces of peds; common iron and manganese concretions; slightly acid; clear smooth boundary.

C1—42 to 48 inches; light olive brown (2.5Y 5/4) loam; few fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; common iron, manganese, and calcium carbonate concretions; slight effervescence; moderately alkaline; gradual smooth boundary.

C2—48 to 60 inches; light olive brown (2.5Y 5/4) loam; massive; friable; common iron, manganese, and calcium carbonate concretions; slight effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 30 to 46 inches.

The A1 horizon has color value of 2 or 3 and chroma of 1 or 2. It is loam or silt loam high in sand. The A2 horizon has value of 4 or 5 and chroma of 1 or 2. It ranges from loam to silt loam high in sand. The B2t horizon has value of 4 or 5 and chroma of 3 through 6. It is loam or clay loam. Reaction ranges from slightly acid to strongly acid.

Lester series

The Lester series consists of well drained, moderately permeable soils on uplands. These soils formed in glacial till. The slope ranges from 2 to 9 percent.

Lester soils are similar to Clarion, Hayden, and Le Sueur soils and are commonly adjacent to Le Sueur soils on the landscape. Unlike Lester soils, Clarion soils have a mollic epipedon and do not have an argillic horizon. Hayden soils have a thinner A1 horizon and a prominent A2 horizon. Le Sueur soils are nearly level. They have a mollic epipedon, and the color of their Bt horizon is of lower chroma than that of Lester soils.

Typical pedon of Lester loam, 2 to 5 percent slopes, 545 feet west and 500 feet north of the SE corner of sec. 30, T. 83 N., R. 26 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate medium subangular blocky structure; friable; medium acid; clear smooth boundary.

B1—7 to 13 inches; brown (10YR 4/3) loam, brown (10YR 5/3) dry; discontinuous very dark grayish brown (10YR 3/2) coatings on peds; weak medium subangular blocky structure; friable; medium acid; clear smooth boundary.

B21t—13 to 18 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; continuous moderately thick dark brown (10YR 3/3) clay films on faces of peds; medium acid; gradual smooth boundary.

B22t—18 to 29 inches; dark yellowish brown (10YR 4/4) clay loam; few fine prominent yellowish red (5YR 5/8) and dark reddish brown (5YR 2/2) mottles; moderate medium subangular blocky structure; firm; discontinuous thick dark brown (7.5YR 3/2) clay films on faces of peds; few iron and manganese concretions; medium acid; gradual smooth boundary.

B23t—29 to 32 inches; yellowish brown (10YR 5/4) clay loam; few fine prominent yellowish red (5YR 5/8) and dark reddish brown (5YR 2/2) mottles; moderate medium subangular blocky structure; firm; discontinuous thick dark brown (7.5YR 3/2) clay films on faces of peds; few iron and manganese concretions; slightly acid; clear smooth boundary.

C1—32 to 37 inches; yellowish brown (10YR 5/4) clay loam; few fine prominent yellowish red (5YR 5/8) and dark reddish brown (5YR 2/2) mottles; massive; firm; few iron and manganese concretions; few soft masses of calcium carbonate; strong effervescence; mildly alkaline; gradual boundary.

C2—37 to 44 inches; mottled yellowish brown (10YR 5/4), yellowish red (5YR 5/8), dark reddish brown (5YR 2/2), and strong brown (7.5YR 5/6) loam; massive; friable; few iron and manganese concretions; few soft masses of calcium carbonate; strong effervescence; mildly alkaline; gradual smooth boundary.

C3—44 to 60 inches; mottled light yellowish brown (10YR 6/4), yellowish brown (10YR 5/4), strong brown (7.5YR 5/6), and dark reddish brown (5YR 2/2) loam; massive; friable; few iron and manganese concretions; few soft masses of calcium carbonate; strong effervescence; mildly alkaline.

The thickness of the solum and the depth to free carbonates range from 24 to 48 inches.

The A1 horizon has color value of 2 or 3 and chroma of 1 or 2. It ranges from sandy loam to clay loam. The A2 horizon, where present, has value of 3 or 4 and chroma of 1 or 2. It is sandy loam or loam and in most places is mixed with the Ap horizon. The B2t horizon has value of 4 or 5 and chroma of 3 or 4. Reaction ranges from strongly acid to slightly acid.

Luther series

The Luther series consists of somewhat poorly drained, moderately slowly permeable soils on uplands. The soils formed in glacial till. The slope ranges from 0 to 2 percent.

Luther soils are similar to Hayden, Lester, and Le Sueur soils and are commonly adjacent to Hayden soils on the landscape. Hayden and Lester soils are on convex, more sloping areas and have colors of higher chroma in the subsoil. In places Le Sueur soils do not have an A2 horizon; in other places the A2 horizon is less prominent.

Typical pedon of Luther loam, 0 to 2 percent slopes, 687 feet south and 924 feet west of the center of sec. 8, T. 83 N., R. 26 W.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, gray (10YR 5/1) dry; discontinuous very dark gray (10YR 3/1) coating on peds; moderate fine subangular blocky structure parting to moderate fine granular; friable; many very fine roots; many fine tubular pores; slightly acid; clear smooth boundary.

A21—4 to 7 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; discontinuous very dark gray (10YR 3/1) coatings on peds; moderate fine subangular blocky structure parting to moderate fine granular; friable; many very fine roots; common very fine tubular pores; slightly acid; clear smooth boundary.

A22—7 to 10 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; discontinuous very dark grayish brown (10YR 3/2) coatings on peds; weak medium platy structure parting to weak fine subangular blocky; very friable; discontinuous gray uncoated silt and sand grains on faces of peds; common very fine roots; many very fine interstitial pores; slightly acid; clear smooth boundary.

A23—10 to 15 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; discontinuous very dark grayish brown (10YR 3/2) coatings on peds; moderate fine subangular blocky structure; friable; discontinuous gray uncoated silt and sand grains on faces of peds; common very fine roots; common very fine interstitial and tubular pores; slightly acid; clear smooth boundary.

B1t—15 to 18 inches; dark grayish brown (10YR 4/2) clay loam; moderate medium subangular blocky structure; firm; discontinuous dark grayish brown (10YR 4/2) uncoated silt and sand grains on faces of peds; discontinuous thin very dark grayish brown (10YR 3/2) clay films on peds; common very fine roots; common very fine interstitial and tubular pores; medium acid; clear smooth boundary.

B21t—18 to 22 inches; dark grayish brown (10YR 4/2) clay loam; weak medium prismatic structure parting to moderate medium angular blocky; firm; discontinuous moderately thick very dark grayish brown (10YR 3/2) clay films on peds and pores; few very fine roots; few very fine interstitial and tubular pores; medium acid; clear smooth boundary.

B22t—22 to 28 inches; grayish brown (10YR 5/2) clay loam; few fine prominent strong brown (7.5YR 5/6) mottles; weak medium prismatic structure parting to weak medium angular blocky; firm; discontinuous moderately thick very dark grayish brown (10YR 3/2) clay films on peds and pores; few very fine roots; few very fine tubular pores; few manganese concretions; slightly acid; clear smooth boundary.

B3t—28 to 36 inches; grayish brown (2.5Y 5/2) clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium prismatic structure parting to weak medium angular blocky; firm; discontinuous moderately thick dark grayish brown (2.5Y 4/2) pores; few fine roots; few very fine tubular pores; many manganese concretions; neutral; clear smooth boundary.

C1—36 to 40 inches; grayish brown (2.5Y 5/2) and light brownish gray (2.5Y 6/2) loam; many medium prominent yellowish brown (10YR 5/8) mottles; massive; friable; moderately thick clay films in pores; few fine roots; few fine tubular pores; many manganese concretions; slight effervescence; moderately alkaline; clear smooth boundary.

C2—40 to 44 inches; mottled grayish brown (2.5Y 5/2), light brownish gray (2.5Y 6/2), and yellowish brown (10YR 5/8) loam; massive; friable; discontinuous moderately thick clay films in pores; few very fine tubular pores; few manganese concretions; slight effervescence; moderately alkaline; abrupt smooth boundary.

C3—44 to 52 inches; grayish brown (2.5Y 5/2) loam; many medium prominent yellowish brown (10YR 5/8) mottles; massive; friable; few very fine tubular pores; slight effervescence; moderately alkaline; abrupt smooth boundary.

C4—52 to 60 inches; mottled grayish brown (2.5Y 5/2) and yellowish brown (10YR 5/8) loam; massive; friable; few very fine interstitial and tubular pores; slight effervescence; moderately alkaline.

The thickness of the solum and depth to free carbonates range from 36 to 60 inches.

The A1 horizon has color value of 3 or 4 and chroma of 1 or 2. The A2 horizon has hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 1 or 2. It ranges from loam to very fine sandy loam. The B2t horizon has hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 2 or 3. Mottles are few to many. Reaction is strongly acid to slightly acid.

Moingona series

The Moingona series consists of moderately well drained, moderately permeable soils on alluvial fans and foot slopes along major streams. The soils formed in loamy alluvium. The slope ranges from 1 to 14 percent.

Moingona soils are similar to Le Sueur and Terril soils and are commonly adjacent to Hayden and Sattre soils on the landscape. Terril soils do not have an argillic horizon. Hayden and Le Sueur soils formed in glacial till and have more stones and pebbles. Sattre soils are underlain by sand and gravel.

Typical pedon of Moingona loam, 5 to 9 percent slopes, 850 feet east and 500 feet south of the center of sec. 11, T. 85 N., R. 27 W.

Ap—0 to 7 inches; very dark brown (10YR 2/2) loam, very dark grayish brown (10YR 3/2) dry; moderate fine subangular blocky structure parting to weak medium granular; friable; common micro and very fine random roots; many micro and very fine tubular and vesicular pores; medium acid; clear smooth boundary.

A12—7 to 12 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure; friable; few micro and very fine random roots; many micro and very fine tubular and vesicular pores; slightly acid; clear smooth boundary.

B1t—12 to 16 inches; brown (10YR 4/3) loam; moderate medium subangular blocky structure; friable; few micro and very fine random roots; many micro and very fine tubular and vesicular pores; discontinuous thin clay films on faces of peds; gray (10YR 6/1) uncoated fine sand and silt on faces of peds; slightly acid; clear smooth boundary.

B21t—16 to 20 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; friable; very few micro random roots; many micro and very fine tubular, irregular, and vesicular pores; discontinuous thin clay films on faces of peds, in pores, and as bridges of sand grains; slightly acid; gradual smooth boundary.

B22t—20 to 27 inches; brown (10YR 4/3) clay loam; moderate medium angular blocky structure; friable; very few micro random roots; many micro and very fine tubular and vesicular pores; discontinuous moderately thick clay films on faces of peds and in pores; neutral; gradual smooth boundary.

B23t—27 to 34 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; many micro and very fine to fine tubular, irregular, and vesicular pores; discontinuous moderately thick clay films on faces of peds, in pores, and as bridges of sand grains; neutral; gradual smooth boundary.

B3t—34 to 40 inches; brown (10YR 4/3) clay loam; weak medium subangular blocky structure; friable; many micro to fine tubular, irregular, and vesicular pores; discontinuous thin clay films on faces of peds, in pores, and as bridges of sand grains; neutral; gradual smooth boundary.

C1—40 to 48 inches; brown (10YR 4/3) loam; few fine prominent strong brown (7.5YR 5/6) mottles; massive; friable; many micro to fine tubular, irregular, and vesicular pores; discontinuous thin clay films in pores and as bridges of sand grains; slight effervescence; moderately alkaline; clear smooth boundary.

C2—48 to 60 inches; olive brown (2.5Y 4/4) loam; few fine distinct strong brown (7.5YR 5/6) mottles; massive; friable; many micro and very fine tubular, interstitial, and vesicular pores; slight effervescence; moderately alkaline.

The thickness of the solum and the depth to free carbonates range from 30 to 60 inches. The thickness of the mollic epipedon ranges from 10 to 17 inches.

The A1 horizon has color value of 2 or 3 and chroma of 1 or 2. The A2 horizon, where present, has value of 3 or 4. The A horizon is loam or sandy loam. The Bt horizon has chroma of 4 or 5. The clay content ranges from 21 to 35 percent. The C horizon ranges from sandy loam to clay loam.

Sattre series

The Sattre series consists of well drained soils on stream benches. Permeability is moderate in the upper part and very rapid in the lower part. These soils formed in loamy alluvium that is underlain by sand and gravel at a depth of 24 to 40 inches. The slope ranges from 0 to 9 percent.

Sattre soils are similar to Lester, Moingona, and Wadena soils and are commonly adjacent to Moingona and Wadena soils on the landscape. Sattre soils have a coarser textured substratum than Lester or Moingona soils. Wadena soils do not have an A2 horizon.

Typical pedon of Sattre loam, 0 to 2 percent slopes, 750 feet west and 550 feet south of the center of sec. 11, T. 85 N., R. 27 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure parting to moderate fine granular; friable; slightly acid; clear smooth boundary.

A12—7 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure parting to moderate fine granular; friable; many micro and very fine random roots; many micro and fine tubular pores; slightly acid; abrupt smooth boundary.

A2—9 to 15 inches; brown (10YR 5/3) loam; continuous light gray (10YR 7/2) dry uncoated silt grains on faces of peds; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure parting to weak medium platy; friable; common micro and very fine random roots; many micro and very fine tubular and vesicular pores; neutral; clear smooth boundary.

B1t—15 to 22 inches; brown (10YR 4/3) loam; continuous pale brown (10YR 6/3) dry uncoated silt grains on faces of peds; moderate medium to fine angular blocky structure; friable; discontinuous thin clay films on faces of peds and in pores; few micro and very fine random roots; common micro and very fine tubular pores; slightly acid; clear smooth boundary.

B21t—22 to 28 inches; brown (10YR 4/3) loam; moderate medium to fine angular blocky structure; friable; discontinuous moderately thick clay films on faces of peds and in pores; very few micro random roots; common micro and very fine tubular and irregular pores; medium acid; clear smooth boundary.

B22t—28 to 35 inches; brown (10YR 4/3) heavy loam; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; friable discontinuous moderately thick coatings on peds and in pores with bridging of mineral grains; common micro and very fine tubular and irregular pores; strongly acid; abrupt smooth boundary.

IIB23t—35 to 43 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure; very friable; discontinuous moderately thick clay bridges holding mineral grains together; common micro and very fine irregular pores; strongly acid; clear smooth boundary.

IIC1—43 to 49 inches; yellowish brown (10YR 5/4) sand; single grained; loose; strongly acid; gradual smooth boundary.

IIC2—49 to 60 inches; yellowish brown (10YR 5/4) sand; single grained; loose sand; medium acid.

The thickness of the solum ranges from 23 to 43 inches. The solum and the IIC horizon do not have carbonates. The thickness of a surface layer that has mollic colors ranges from 6 to 9 inches.

The Ap and A12 horizons have color value of 2 or 3 and chroma of 1 or 2. They are silt loam or loam. The A2 horizon, where present, has value of 4 or 5 and chroma of 2 or 3. It is silt loam or loam. The B2 horizon has hue of 10YR or 7.5YR and chroma of 3 or 4. It is loam or clay loam. Reaction ranges from slightly to strongly acid. The IIC horizon ranges from fine sand to gravelly coarse sand.

Storden series

The Storden series consists of well drained, moderately permeable calcareous soils on uplands. The soils formed in loamy glacial till. The slope ranges from 5 to 50 percent.

Storden soils are commonly adjacent to Clarion, Hayden, Salida, and Zenor soils on the landscape. Clarion soils have a mollic epipedon. Hayden soils have an argillic horizon. Salida and Zenor soils have a coarse-loamy control section.

Typical pedon of Storden loam, 9 to 14 percent slopes, moderately eroded, 480 feet west and 2,140 feet north of the SE corner of sec. 35, T. 85 N., R. 26 W.

Ap—0 to 6 inches; brown (10YR 4/3) loam, brown (10YR 5/3) dry; discontinuous dark grayish brown (10YR 4/2) coatings on peds; weak fine subangular blocky structure; friable; very slight effervescence; moderately alkaline; abrupt smooth boundary.

C1—6 to 25 inches; yellowish brown (10YR 5/6) loam; few fine prominent strong brown (7.5YR 5/8) mottles; massive; friable; strong effervescence; moderately alkaline; gradual smooth boundary.

C2—25 to 39 inches; yellowish brown (10YR 5/6) loam; few fine faint strong brown (7.5YR 5/6) and few fine distinct olive (5Y 5/3) mottles; massive; friable; many manganese concretions; strong effervescence; moderately alkaline; gradual smooth boundary.

C3—39 to 60 inches; light olive brown (2.5Y 5/4) loam; common coarse prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) mottles; massive; friable; many manganese concretions; strong effervescence; moderately alkaline.

The solum is 4 to 10 inches thick. Free carbonates are in all horizons.

The A horizon has color value of 4 or 5 and chroma of 2 or 3. The C horizon has value of 5 or 6 and chroma of 2 through 6.

Waukegan series

The Waukegan series consists of dark-colored, well drained to somewhat excessively drained soils that are underlain by coarse sand and fine gravel. These soils have a slope range of 0 to 9 percent. They occur on stream terraces along the Skunk, Des Moines, and Raccoon Rivers and along some of the smaller creeks. The parent material is loamy glacial outwash of Late Wisconsin age over sand and gravel. The depth to sand and gravel ranges from 18 to 60 inches or more. The natural vegetation was mainly prairie.

The level and gently sloping areas are used mostly for row crops, oats, and meadow. The stronger slopes are used for pasture, because they have a severe erosion hazard.

Waukegan loam, moderately deep over sand and gravel

A_p 0 to 8 inches, very dark brown (10YR 2/2) loam; weak, medium, granular structure; friable; slightly acid; range, 4 to 9 inches.

A_3 8 to 11 inches, very dark grayish-brown (10YR 3/2) loam; prominent coatings of very dark brown (10YR 2/2); weak, medium, granular structure; slightly firm; slightly acid; range, 0 to 3 inches.

B_1 11 to 16 inches, brown (10YR 4/3) loam; weak, coarse, granular structure; slightly firm; slightly acid; range, 2 to 6 inches.

B_2 16 to 22 inches, brown (10YR 4/3) and dark yellowish-brown (10YR 3/4) loam; weak, medium, subangular blocky structure that breaks readily to coarse and medium granular structure; firm; slightly acid; range, 4 to 12 inches.

D_1 22 to 25 inches, brown (10YR 4/3) and dark-brown (10YR 3/3) gravelly sandy loam; massive; friable; slightly acid; range, 0 to 12 inches.

D_2 25 to 36 inches, brown (7.5YR 4/4) gravelly loamy sand; massive; loose; neutral to alkaline.

APPENDIX E

RADIOCARBON AND THERMOLUMINESCENCE DATES SAYLORVILLE PROJECT

Site	Context	B.P. (corrected)*	Calendar (corrected)*	Laboratory	Discussion
13PK111	lev. 2	1440+-140	510 A.D.	(Alpha-1279)	TL date on trailed sherd, probably too late (Stanley & Benn 1985)
	fea. 2 40-50cm	2630+-250	680 B.C.	(Alpha-1280)	TL date on burned rock from roasting pit (Stanley & Benn 1985)
13PK112	fea. 2 40-50cm	4130+-430	2180 B.C.	(Alpha-1281)	date on burned rock from roasting pit
13PK149	fea.58 DUII	840+-50 (839)	1110 A.D. (1111)	(Wis-879)	carbon from Late Woodland context (Osborn & Gradwohl 1981:131)
	fea.55 DUII	1575+-55 (1557)	375 A.D. (393)	(Wis-899)	assoc. included Madrid ware (Ibid.)
	fea.12 DUII	1605+-55 (1590)	345 A.D. (360)	(Wis-902)	assoc. included Madrid ware (Ibid.)
	fea. 8 DUII	1605+-60 (1590)	345 A.D. (360)	(Wis-904)	assoc. included Madrid ware (Ibid.)
	DUIII	2820+-65 (3015)	870 B.C. (1065)	(Wis-905)	assoc. L. Archaic pt. type SN16 (Ibid.)
	fea.68 DUIV	3045+-65 (3302)	1095 B.C. (1362)	(Wis-880)	no diagnostics (Ibid.)
	DUIV	3095+-65 (3367)	1145 B.C. (1417)	(Wis-901)	same (Ibid.)
13PK251 bench	fea. 7 lev.VI-7	4100+-70 (4675)	2150 B.C. (2725)	(Wis-1083)	roasting pit below Woodland zone (unpublished; see Thies 1979:139)
13PK251W	stratum I	>300 <700		(Alpha-1282)	poor TL result on Madrid ware sherd

13PK251W (cont.)	fea. 1 stratum II	2400+-110 (2488)	450 B.C. (538)	(Beta-10691)	carbon from roasting pit, Early Wood.(?)
	stratum III	3240+-400	1290 B.C.	(Alpha-1517)	rock from fcr midden
13PK274	20-30cm	210+-150	1740 A.D.	(Beta-6275)	scattered carbon, too late for Woodland context (Emerson et al 1983:372)
13PK315	hearth 30cm	2110+-330 (2146)	160 B.C. (196)	(Beta-10048)	carbon assoc. with McBride ware (Emerson & Finney 1983: 81-3)
13PK404	log	12160+-80	10210 B.C.	(Beta-2632)	Late Wisconsinan outwash gravels (Benn & Bettis 1981)
13PK405	upper soil	210+-50	1740 A.D.	(Beta-5230)	carbon from mixed contexts assoc. Woodland deposit (Benn & Harris 1983)
13PK407	1m below Ap	1130+-80 (1110)	820 A.D. (840)	(Beta-2633)	carbon from possible Woodland component (Benn & Bettis 1981)
	fea. 3 TU #1	700+-140 (710)	1250 A.D. (1240)	(Beta-5231)	carbon from 100cm in Oneota midden (Benn & Harris 1983)
	TU #9	235+-95	1715 A.D.	(Beta-4925)	assoc. w/ Oneota vessel, too late (Ibid.)
	fea.10 hearth	modern		(Beta-7834)	locus I Oneota, too late (Benn 1984)
	fea.14 ash dump	modern		(Beta-7835)	locus IV Oneota, too late (Ibid.)
	fea.25 hearth	90+-70	1860 A.D.	(Beta-7836)	locus I Oneota, too late (Ibid.)
13PK414	buried soil	5190+-100 (5987)	3240 B.C. (4037)	(Beta-2634)	assoc. w/ 3/4 ax, TH terrace (Benn & Bettis 1981)
	above buried soil	1830+-240 (1831)	120 A.D. (119)	(Beta-6781)	TH terrace, too late (small sample)

13PK424	buried soil	420+-50 (456)	1530 A.D. (1494)	(Beta-4734)	TL terrace (Benn & Bettis 1981)
13DA162	below TH terrace	15210+-150	13260 B.C.	(Beta-11166)	probably Wis. alluvium (Bettis & Hoyer 1985)
13BN27	1st TH paleosol	3920+-80 (4445)	1970 B.C. (2495)	(Beta-12911)	dispersed charcoal from Archaic midden (ca.200cm, block C)
	1st TH paleosol	3410+-440	1460 B.C.	(Alpha-2071)	TL date on fcr from Archaic midden, 200cm block C (date represents ave. of two TL plateaus)
	6th TH paleosol	6170+-170 (6997)	4220 B.C. (5047)	(Beta-12912)	dispersed charcoal from non-cultual sources (block A-C)
13BN30	34cm	2300+-60 (2368)	350 B.C. (418)	(Beta-2810)	Middle Woodland assoc., also Late Archaic present (Osborn & Gradwohl 1982:114)
13BN103	fea. 7 buried soil	3560+-80 (3973)	1610 B.C. (2023)	(Wis-1220)	171cm deep, below Woodland levels (Osborn & Gradwohl 1981:579)
13BN110	midden	950+-55 (940)	1000 A.D. (1010)	(Wis-498)	Great Oasis village (Gradwohl 1975:123)
	midden	870+-60 (867)	1080 A.D. (1083)	(Wis-501)	same (Ibid.)
	midden	975+-55 (872)	975 A.D. (978)	(Wis-502)	same (Ibid.)
13BN114	1st TI paleosol	1670+-175 (1657)	280 A.D. (293)	(Beta-12909)	wood charcoal below 1st paleosol (1m depth) in bachoe trench
	1st TH paleosol	2080+-60 (2112)	130 B.C. (162)	(Beta 12910)	wood charcoal in cultural fea. (?) ca. 30cm in TU#1
13BN121	midden	1600+-55 (1583)	350 A.D. (367)	(Wis-517)	Middle Woodland, structure assoc., (Gradwohl 1975:120)
	pits	1670+-55 (1657)	280 A.D. (293)	(Wis-630)	same (Osborn & Gradwohl 1982:114)

13BN123	midden	940+-60 (932)	1010 A.D. (1018)	(Wis-906)	Middle Woodland assoc. (too late) (Osborn & Gradwohl 1982:202)
13BN182	fea. 1	1820+-60 (1819)	130 A.D. (131)	(Beta-2811)	Middle Woodland assoc. (Osborn & Gradwohl 1982:258)
	fea. 2	2490+-80 (2599)	540 B.C. (649)	(Beta-2812)	Middle Woodland assoc. (too early) (Osborn & Gradwohl 1982:251)
13BN203	base of fan (drill core)	13980+-170	12030 B.C.	(Beta-10883)	(too early) Wis. alluvium or coal contamination (Bettis & Hoyer 1985)
	sidevalley terrace	2950+-70 (3178)	1000 B.C. (1228)	(Beta-11164)	terrace correlates w/ fan (Ibid.)
	same	3070+-140 (3334)	1120 B.C. (1384)	(Beta-11162)	same (Ibid.)
	same	7390+-250	5440 B.C.	(Beta-11163)	same (Ibid.)
13BN277	rock bench (test unit A1)	4200-1300	2250 B.C.	(Alpha-2072)	TL date on burned rock from shell midden on bedrock bench below TI; TL date is a maximum--no plateau present
13BN278	1.9m deep	4190+-100 (4792)	2240 B.C. (2842)	(Beta-11115)	clam & fcr midden in TH terrace
Coal Valley	drill hole	3930+-120 (4455)	1980 B.C. (2505)	(Beta-10881)	dates earliest TI channel next to TH (Bettis & Hoyer 1985)
	drill hole	11000+-290	9050 B.C.	(Beta-10882)	dates basal soil of TH terrace (Bettis & Hoyer 1985)
13BN279	paleosol II	3190+-190 (3491)	1240 B.C. (1541)	(Beta-11116)	below Woodland lev. in stratum I
	IIIB	3900+-70 (4418)	1950 B.C. (2468)	(Beta-11117)	carbon from fea. 8, a pit
	IV	4610+-80 (5312)	2660 B.C. (3362)	(Beta-11118)	chunks of charcoal from the cutbank
	VI	6200+-260	4250 B.C.	(Beta-11119)	assoc. with Archaic

13BN279 (cont.)		(7026)	(5076)		midden, block G (Ibid.)
	VI	5490+-80 (6310)	3540 B.C. (4360)	(ISGS-1359)	wood charcoal from Archaic midden, block H (Ibid.)
	VII	5430+-100 (6248)	3480 B.C. (4298)	(Beta-11120)	non-cultural carbon from trench A1, Des Moines R. alluvium below fan deposits
	VII	5680+-90 (6508)	2730 B.C. (4558)	(Beta-10884)	non-cultural carbon in fan deposits
	VII	6200+-100 (7026)	4250 B.C. (5076)	(ISGS-1357)	carbon from natural burn in Des Moines R. alluvium below fan deposit, trench A
	fan south of 13BN279	1490+-80 (1470)	460 A.D. (480)	(Beta-11167)	from fan-TI interface (Bettis & Hoyer 1985)
13BN280	buried soil	modern		(Beta-11165)	non-cultural, TI terrace topsoil

*date corrections calculated from Damon et al 1974

Appendix F

Annotated Listing of Repositories
Pertaining to the
Central Des Moines Valley

and

Annotated Bibliography

ANNOTATED LISTING OF REPOSITORIES PERTAINING TO THE CENTRAL DES MOINES VALLEY

by Leah D. Rogers

Historical Library, Des Moines

The library is open weekdays and can be used by the general public. It is only a reference library, and material cannot be checked out.

It has a complete collection of county history books for the State of Iowa, as well as a collection of State and County census records on microfilm. The latter are located in the basement of the Historical Building. The Palimpsest, Hawkeye Heritage, Iowa Journal of History and Politics and the Annals of Iowa are also available in the library.

The following are specific references pertaining to the Central Des Moines River Valley that can be found in this library. They are listed by county, and each includes its specific call number.

Boone County

1902 Atlas of Boone County 912.77 B64
Grave Records, D.A.R. Vols. 12 & 14 977.7 D26

Graves Registration, W.P.A. 1940, 4 Volumes 977.718 G.75

Dalander Cemetery --Biographical Directory compiled by Kevin Proescholdt in 1976 977.718 P942
This report records burials in this Boone County cemetery and provides valuable biographical information about the individuals buried here. Included are Charles W. Gaston and the Dalander family, early pioneers of this area.

Saylorville Lake Cemetery Reinterments, 1913 and 1972. 977.718 Sa99
This includes information concerning the burial removals from the Elk Rapids Cemetery (1913 and 1972) and the Corydon and Cole Family cemeteries (1972).

1849 Boone County Census compiled by Howard Snedden and located in Hawkeye Heritage Vol. 1, No. 2 p. 5 1967. 977.7 H313

Historical Records of Boone County Churches 977.718 C461

Marriage Index -- 1848-1893 compiled by the Boone County Genealogy Society in 1983. 977.718 B644m

Early Land Records, compiled by Dorothy Warren 977.718 W251

Index to a Scrapbook of Marriage Licenses, 1894-1899 compiled by Simon Casady 977.7 Io9 mar

Marriages, 1856-1880 DAR. Genealogical Records, Vol.24, pp. 138-246. 977.7 D26

Scrapbook of Obituaries, 1880s-1890s. 977.718 Scr 16

Boone County School Census, 1889-1890 compiled by Dorothy Warren 977.718 W251

Iowa Clipping File #2:

1) Excerpt from F. A. Danbom's 1908 report on "Our Swedish Pioneers In Swede Point" in Prarieblomman listed under "Boone County." This report describes the Swedish immigrants journey to the U.S. and their settlement at Swede Point, Iowa. Reference to Elk Rapids can be found on p.208 and the reasons for the location of Swede Point on p. 205.

2) Short History of Old/abandoned Towns of Boone County--an article by John Malmquist entitled "Boone County" which appeared in the 1980 issue of Iowa Postal History Society, No. 135. This is listed under "Iowa Post Offices." It describes the postal routes and early post offices in Boone County. Elk Rapids is discussed on pp. 14 and 17, and Incline can be found on p. 16.

3) Elk Rapids Cemetery Removals-listed in Section 3 under "Cemetery." Includes list of names of burials removed in 1913 as well as the 1972 reinterment information from the Corps of Engineers.

Polk County

Inventory of the Polk County Archives, 1942, WPA, Historical Records Survey. 977.788 Io9h

Historical Writers Project - "History of Polk County" 977.788 Io9h (primarily the early history of Fort Des Moines.)

1914 Atlas of Polk County 912.77 P75

Land Grants, Vol. 4 977.7 Io9g (typewritten-bound- Military Land Grants)

Index Plat of Polk County, 1884 compiled by G. A. McVicker. 977.7881 M25 Listed in a section of this Index Plat book are Andrews, Corydon and New Corydon under a section entitled "Towns not Incorporated." This reference gives the legal location for these towns and the plat book number and page number where their respective plats are located. Andrews is in Plat Book A, p. 163; Corydon is in Plat Book A, p. 159, and New Corydon is also in Plat Book A, p.149.

1907 Plat Book of Polk County 912.77 P75

Auditor Financial Reports for: 1867-1899, 1900-1906, 1908-1909, 1914, 1916, 1918, 1932, 1934-1935, 1937-1938, 1968-1970. 352 P76

Biographical Index for Polk County compiled by James Leonardo 1971. 977.7881 D46

Cemetery Records, D.A.R., 1933 977.788 D26

Cemetery Records, compiled by Sibyl Taylor, 1967 (typewritten). 977.788 Io9c

Des Moines, Iowa Illustrated, 1889 published by J. P. Bushnell and Company. 977.7881 B96

Bushnell's Polk County, Iowa Directory, 1878 published by J. P. Bushnell and Co. 917.77 P76
This directory lists residents of Polk County in 1878 by name, township, number of school district and post office address. A brief survey of this directory produced three names with a Corydon post office address--D. Davenport (p.103), David Edmondson (p.108) and J. W. Nuckles (p.152).

Directory of Rural Districts of Polk County, Iowa 1916-1917 published by the Farmers Directory Co., Des Moines. 917.77 P76f

Polk County Coal Mines by LeRoy G. Pratt 1974 Polk County Historical Society. This reference is a brief history of coal mining and a listing and description of coal mines in Polk County.

Index to the Register of the Polk County Association of Early Settlers, compiled by Ethel McGlothlen, 1969. 977.7 H313

Polk County Rural School Districts. 977.788 Sc61

Land Entries in Polk County, compiled by A. A. Reams, 1943. 977.788 R23

Marriage Records, 1846-1851. D.A.R. 977.7 D26

Polk County Old Settlers Association: roster, minutes, by-laws, constitution, index, 1868-1911. 977.788 P76

Graves Registration, WPA, five volumes. 977.7 G75
Note that the WPA graves registration program was to record tombstones in order to find war veterans. Therefore, these records contain few female names and are generally very incomplete.

Dallas County

Inventory of Dallas County Archives, Historical Records Survey, 1938. 977.735 D16i

Cemetery Records, D.A.R. 977.7 D26

1854 Special Census of Dallas County found in Hawkeye Heritage, Vol. 2, p. 138, 1967. 977.7 H313

Dallas County Census of 1850, 1854, 1856 & 1860. 977.735 Sn22

Dallas County Records, Vol. 1 and 2 compiled by Howard E. and Barbara Snedden, 1971, Des Moines. Vol. 1 contains the following records: 1850, 1854, and 1856 State Census for Dallas County, Original Land Entries—Dallas County, Marriages, 1847-1886—Dallas County, Bibliography and an index. Vol. 2 contains: 1860 Census (Dallas County), 1860 Census mortality schedule, 1860 Census products of industry, Wills (1851-1910), Index to Testator/Testatrix

Each volume also contains a history section in front of the records. Volume 1 addresses the emigration patterns of the 1850s and the reasons for them--includes discussion of land speculators and railroads. Volume 2 addresses the years 1856-1860 wherein emigration slowed down and the reasons for this. Includes discussion of the economic crisis of 1857, severe weather, floods and gold finds.

Iowa Clipping File #2 - "Dallas County"
This contains maps of Dallas County showing township changes from 1846-1870. Railroads and towns are shown on the 1870 map.

Pamphlets which were written in the 1870s attempting to spur development on the frontier can be found in the Iowa Historical Library under Pamphlets on Iowa, Vol. 1. Included are the following:

Choice Farming Lands in Iowa and Nebraska published in Cedar Rapids in 1871. Moingona and Boone are described on pp. 29-31.

Manufacturing, Agricultural, and Industrial Resources of Iowa by H.S. Hyatt, published by the Republican Steam Printing House in 1873. The Des Moines River area is described on pp. 31-32, including navigation improvement, and the towns of Moingona and Boonsboro. Coal resources are described on pp. 38-42. There is also a newspaper and periodical index for Iowa in the back of this pamphlet (pp. 152-155), although it is not very complete.

Specific references concerning the Des Moines River improvement controversy can also be found in the Iowa Historical Library. These include the following:

"The Great Des Moines River Land Grab" by Ruth S. Beitz in The Iowan, Vol. 13, pt. 4, p.42. 977.7 Ar2

Early History of the Des Moines River (scrapbook). 977.7 Scr 3a

Iowa Journal of History and Politics, Vol. 35, pp. 142-180, article by Jacob Swisher. 977.7 Io9p

"Des Moines River Land Case—Full Text of Opinion by Judge Shiras" in Iowa Miscellany, No. 2, p. 164. 977.7 Scrf

Annals of Iowa—re. Des Moines River Land Grant: Vol. 1, No. 5, pp. 354-370; Vol. 1, No. 7, pp. 536-553; Vol. 1, No. 8, pp. 466-492 and 629-641. 977.7 An/

"Des Moines River Land Grant" -- pamphlet. 977.7 D46

"Des Moines River Land Grant." 977.7 Un3

"Statements of facts and arguments of Honorable Jackson Orr of Iowa, upon the Hill for the relief of certain settlers on public lands of Iowa falling within the Des Moines River Grant" in Miscellaneous Pamphlets, Vol. 1. 977.7 Io9

Des Moines River Lands Commission--"Losses of Settlers and Claimants upon Des Moines River Lands made to Governor," 1872 (pamphlet). 977.7 D46

"Claims of the Settlers upon Des Moines River lands, for protection," n.d. by Galusha Parsons. 977.7 D46.
This is a pamphlet which describes the legal proceedings of the Des Moines River improvement from its inception in 1846 up to the late 1860s when this claim for the settlers in primarily Webster & Hamilton Counties was written.

Newspaper & Census Library, Historical Building, Des Moines

This library is open to public use and consists of microfilmed and original records. Newspapers pertinent to the project area and which are on microfilm include the following:

Boone Democrat, Boone County Index, Boone Independent, Boone Standard, Boone Weekly News, Boone Daily News, Boone County Pioneer, Boone County Republican, Boone News Republican, Boonsboro Democrat, Boonsboro Index Madrid Register News, Ogden Reporter, Polk City Big Creek News and Polk City Citizen. The last two are only recent records, and the Dallas County papers are mainly from Adel and Dallas Center. There were no listings for Woodward.

There is a reference entitled A Bibliography of Iowa Newspapers, 1836-1976, compiled by the Iowa Pilot Project of the Organization of American Historians--Library of Congress, U.S. Newspaper Project, 1979, Iowa State Historical Department. This lists available newspapers by city or town, the years available, where they are located, and whether it is on microfilm or an original.

State and Federal Census records are also available in this repository on microfilm. These records are fairly complete. There are also Iowa Civil War Rosters on microfilm.

Some county records are also available on microfilm for Boone, Polk, and Dallas Counties. For Boone there are the following:
Homestead Book 1876-1932
Original Entries - index and copies 1848-1859
Land Deed Index 1855-1911
Deed Records - Land and Town Lot 1849-1890s
Cemetery Deed Records 1882-1896
Death Register 1880-1901
Marriage Records 1851-1880s
Probate Records
Naturalization Records
Military Records

Geneological Records: church records, cemetery records, funeral home cases, family records

For Dallas County there are the following:

Land Records - Deed Index, Mortgage Index, Deed Records 1849-1885 Land, Deed Records 1855-1888 Town Lot
Miscellaneous Record
Original Entries 1851-1864
Homestead Record 1883-1885
Marriage Records
Will and Probate Records

For Polk County there are:

Land Records -deeds, mortgages
Marriage Records
Probate and Wills
Naturalization Records

Also available for research are Miscellaneous Microfilm of the following:

County Atlas' Boone County 1896, 1902, 1918, 1935;
Dallas County 1916, 1929, 1939; Polk County 1902, 1907, 1914
Des Moines River Lands--Tract Book
Immigration Passenger Lists
Indian Records - most postdate 1860s
Stagecoach Era in Iowa, master thesis by Kenneth Colton, February 1942, State University of Iowa.

State Historical Society of Iowa, Iowa City

This repository is located in Iowa City and is open to the public Monday through Saturday. This is a reference library and materials generally cannot be checked out.

The library contains general history references, as well as a complete collection of Iowa county histories, Hawkeye Heritage, the Palimpsest, the Annals of Iowa, The Iowan and the Iowa Journal of History and Politics. All of the periodicals are indexed. The Vertical File contains miscellaneous items by subject. Little was found in these files which is of interest to this project.

Plat maps by county are available on microfilm and photocopies can be obtained. For Boone County there are the 1896 Plat Book (this has a patron's directory and includes plats of Coal Valley and Moingona), the 1902 Republican Atlas of Boone County by Hovey and Frame, the 1918 county atlas (includes a farmer's directory), and the 1935 county Plat Book and Farm Directory published by the Merchants Messengers on microfilm. State and Federal Census records are also available on microfilm and are fairly complete. Newspaper records are available, some of which are on microfilm and others which are stored in the basement and can be viewed upon request. These records are indexed and often discontinuous in chronology. Original copies of the Montana Standard (early Boone Iowa newspaper) are on file in this repository. For

Dallas County there are only 1916, 1929, and 1939 plat maps on microfilm and for Polk County only 1902, 1907, 1914 and 1930 maps. The 1902 and 1914 books contain plats of Corydon and Andrews.

Also available for viewing are microfiche copies of Fire Insurance maps for Iowa communities. These generally start in the 1870s and show building locations in communities for fire insurance purposes. For Boone County there are five maps for Boone and Madrid, and for Polk County there is a 1934 map for Polk City.

There are volumes in the basement concerning original entries and land deed records (abstracts) from the Indian Claims Community Court Case Files R56. This is in the form of a computer printout and Boone, Polk and Dallas counties are included.

Specific references that can be found in the library pertaining to the central Des Moines River Valley include the following:

Boone County, Iowa Marriage Records Index 1848-1893 compiled by the Boone County Genealogy Society in 1983.

Boone County Marriages listed by year for January 1850 to May 1862 also compiled by the Boone County Genealogy Society.

Boone County Graves Registration, WPA 1939, burial records are listed alphabetically and tell where buried and birth/death dates.

Polk County, Iowa Probate Book A from 1846-1849 and Will Book 1 from 1851-1866 published by the Pioneer Sons and Daughters Genealogical Society, Des Moines, 1981-1983. The probate book lists probates and wills, when the individual died, administers appointed, and when inventoried. There are only 16 entries in this book. The will book lists when died, administers appointed, inventory, claims made, abstracts of wills and lists of the heirs.

Polk County Death Index 1880-1883, published by the Pioneer Sons and Daughters Genealogical Society. This is out of Book 1 of the Death Records and lists names alphabetically giving the death certificate number, book number and page.

Polk County Declarations of Intent, May 1848-October 1889. Published by the Pioneer Sons and Daughters Genealogical Society. This shows certificates which are also on microfilm in the Polk County Courthouse in Des Moines. The name, where immigrated from and the filing date are listed.

Polk County Early Marriages, June 1846-April 1871 published by the Iowa Genealogical Society, Des Moines. These records are from Book A, pp. 1-258 and Book B.

Polk County Graves Registration, WPA, 1938, burial records (alphabetical), birth, death, age and where buried.

The Hawkeye Heritage is published by the Iowa Genealogical Society in Des Moines and contains the following references pertinent to this project:

1966 Vol. 1, No 2—Early Boone County Marriages July 1856-1863, pp. 7-10.

1967 Vol. 2, No. 4—Dallas County, Iowa 1854 Census by Township, pp. 138-141; Dallas County History, pp. 136-173; Dallas County First Marriages 1851-1861, pp. 142-148; and Dallas County Cemetery Inscriptions (includes Xenia Cemetery), pp. 156-173.

1968 Vol. 3, No. 1—Dallas County Civil War Soldiers, pp.5-7; Dallas County Original Land Entries, pp.7-9; Dallas County First Book of Wills pp. 10-13; Dallas County War of 1812 Soldiers, p. 13; and Dallas County Cemetery records pp. 14-40.

1975 Vol. 10, No. 3—Polk County Marriage and Death Records, 1849-1850, p. 124.

The second floor of the Historical Society in Iowa City houses a manuscript, map, and photograph collection which is indexed by subject and author. Material pertaining to this project area includes the following:

1880 maps for Polk and Boone Counties

1869 map of Minburn, Dallas County, Iowa which has an inset showing a portion of the Boone County area. In particular one can see the locations of Moingona, Boonsboro, "Montania," Swede Point, and Polk City, but no finer details.

There is also some material available pertaining to the Des Moines River Land Grant and improvement controversy. This material includes the following items:

1) Land Deed of Release from the Des Moines Navigation and RR Co. to Daniel B. St. John dated 1860.

2) Des Moines River Improvements—Report of the 1841 Survey.

3) "Notes on the Des Moines River Land Court Case" by Galusha Parsons. He was a Fort Dodge lawyer who was employed by settlers to present their case to the U.S. Supreme Court in 1868. These notes are in a bound volume and include newspaper clippings and government documents pertaining to the Des Moines River Land Grant.

4) Papers of Cyrus C. Carpenter, Iowa Governor from 1872-1876. This collection covers the years 1845-1914 and in Box 15, folder 19, there are the following items pertaining to the river improvement controversy:
a) Reports, bills and petitions as follows which were presented before the legislature:
    1) "Statement of Settlement with the Des Moines Navigation and RR Co.," 1858.
    2) Report on the Disposition of Land Grants.
    3) Petition of settler's claims on land granted to the navigation company which includes around 50 names.
    4) Bills—include authorization to settle with the navigation

company, to correct land deed errors, and to provide land patents.

b) Newspaper clipping from the Boonsboro Democrat in 1857.

c) Three speeches given in 1858 concerning the navigation company.

University of Iowa Library, Iowa City

In the Special Collections Department of this library there is a collection of Iowa Land Records. These are computer printouts like those found in the State Historical Society. These concern the Indian Claims Community Case (1860s) wherein Indians attempted to obtain better reimbursement for the lands they ceded in the 1830s-1840s. This includes information concerning original land sales in these areas, and Boone, Polk, and Dallas counties are included.

Army Corps of Engineers - Rock Island District

Information pertaining to the Saylorville Lake Cemetery Relocations is stored at the Rock Island District Offices. There is a box full of reports and field notes concerning the 1972 cemetery relocations housed in the attic of the Clock Tower Building. The following information is included.

1) Initial Report—1972 Design Memorandum No. 20 Cemetery Relocation Plan, U.S. Army Corps of Engineers: this contains basically the same information as the final report except for the following:

   Table 1—Tract Data-gives owner's name and number of graves initially estimated to be moved: Corydon-14, Elk Rapids-103, Cole-3.

   Table 3—description of monuments and markers to be moved, gives names where known.

2) Final Report-Cemetery Relocations 1974, U.S. Army Corps of Engineers, Rock Island District: This contains a detailed description of each cemetery and how and where the graves were relocated.
   Table 1 shows the number of graves which were actually relocated: Corydon-25 (relocated to the Polk City Cemetery), Elk Rapids-128 (relocated to the Dalander Cemetery), Cole-3 (relocated to the Dalander Cemetery), 3 individuals were reinterred at the Mineral Ridge Cemetery.

   Table 2—gives the grave number, the reinterment lot number, the name of the deceased (where known), year of birth, year of death and a description of the remains and/or graves. Note that no names or birth/death dates are known for the Corydon Cemetery as the tombstones had been removed by a landowner years ago. Seventy-one of the 128 burials removed from the Elk Rapids Cemetery were identifiable, as were the individuals from the Cole Family Cemetery.

   Table 3—lists the next of kin consenting to the removals, their address and relationship to the deceased. This listing could be utilized to contact possible informants should an oral history program be initiated for the Saylorville Lake project area.

Table 4--lists and describes the disposition of the special warranty deeds for the grave sites.

This report also contains an overview map of the cemetery relocations showing original cemetery locations and the location of the reinterment cemeteries. Other maps illustrate the original grave locations providing a "plat" of the original cemeteries, and another set show where the graves where reinterred in the relocation cemeteries. Photos are also provided of the original cemeteries before and after disinterments. Photos of the relocation cemeteries showing where the reinterments are located are also provided in the back of this report.

This final report can be referenced in future studies. There are some oral interviews recorded in both reports which are of interest especially as some of these contacts may be dead now. For example on page 3 of the Final Report there is an interview recorded with a resident who lived near the Corydon Cemetery. She recollected that her father called this the "Ashley Cemetery" and that the following people were buried there:

Ashley	Sharp	Andrews
Davenport	Mentzer	Hunt
Sumny	Wilson	Calhoune
Bice	Walker	Hands
Sheets	Edwards	Phillips
Dr. Skidmore	Day	Kuntz
Lawrences	Enoch	Baker

Such information could be confirmed through census and death records.

3) Cemetery Removal Field Notes--Log Book number 1 gives a daily account of the disinterments, what was found, condition of the skeletal material (general age if obvious) and what was buried with the individual (i.e., buttons, watches, jewelry, etc.). This log book can also be referenced in future studies

4) There are descriptions of the epitaphs (where decipherable) on the headstones in the Elk Rapids cemetery, as well as detailed drawings of the headstones from the Elk Rapids and Cole Cemeteries. These headstones were reset at the reinterment sites. This information is valuable as a permanent record should the stones ever be destroyed or deteriorate.

5) Slides were taken of the cemetery relocation process; however, these are not available or approved for publication. They serve as a permanent record of this project but are of little use archaeologically, except for possible photographic examination and analysis of the skeletal remains. An assessment of this potential research area is beyond the expertise of this consultant and there may be legal problems in using these slides for research purposes.

A portion of the Elk Rapids Cemetery was already relocated in 1913 to make way for a new railroad embankment. The consent forms and records of this earlier relocation are on file at the Rock Island District Office; however, they are not located in the box with the above described data.

The Survey Branch of the Rock Island Corps of Engineers, located in the Annex Building, has maps of the Saylorville Lake project area mapped in 5' or 2' contour intervals. These were executed in 1960 and are available in three sizes: 1"=200', 1"=400' and 1"=500'. Tract numbers are listed on the last two sizes but not the first. These maps show the location of all buildings extant at that time and their function, fenceline locations, vegetation, power lines, roads, areas of cultivation and pasture and features such as quarries and coal mines. The 1"=200' and 400' sizes are the best for detail as the 500' size is too small to clearly see the structural information. There was some remapping done in the Saylorville Lake area in the 1970s; however, this was primarily in the vicinity of the dam.

The vault room located on the second floor of the Clock Tower Building contains the following records:

1) There are four boxes containing the land titles to the property acquired by the Corps of Engineers in the Saylorville Lake area. These are the actual formal deed titles.

2) There are 15 file drawers full of the Acquisition Files for the Saylorville Lake. These include (basically):

   a) A legal description of the property acquired
   b) Acquisition data--who the current owners are when bought, where recorded, and when the dwelling was built (if known)
   c) Assessment Data
   d) General area data--description
   e) Highest and best use of property
   f) Description of Property--detailed descriptions, some of these files have special appraisal reports included which are extremely detailed and often provide structural drawings.
   g) Description of Part Taken
   h) Discussion of Compensation
   i) Market Data Approach to Value
   j) Land Classification and estimated breakdown of "before Fair Market Value" and "after Fair Market Value"
   k) Severance Discussion
   l) Economic Conditions and Trends of Values-at time of acquisition
   m) Addenda: Maps of property, and photos of buildings and of the general property being acquired. Most of the photos are the originals although some are only xerox copies. Some of the photos are in color and others in black and white.

The land acquisition data in these files generally only traces previous ownership back one or two owners. This usually traces back to the early 1900s. There is a possibility that the land ownership records are already researched more completely but this information has not been located as yet at the Rock Island offices.

The photographs and drawings are valuable as they provide the only record of the structures that were still standing in the area prior to the construction of the reservoir. These structures have long since been removed (some were relocated outside of the lake area) or destroyed. An architectural survey could still be conducted utilizing these acquisition files.

State Historic Preservation Office, Des Moines

This office is located in the Historical Building and it contains the following items which can be viewed upon request and can generally be photocopied:

1) Site Inventory Records:
   Coal Valley House 8-84N27W-030
   Coal Valley School 8-84N27W-029
   Logansport Structures 8-84N27W-005 to 15

   These records do not provide a great deal of information, but they do contain a photograph of the building as well as a map pinpointing its location. Other sites in the project area may be inventoried but researching these records requires designating a specific locale and having the inventory personnel look that locality up. There is no general index available.

2) McCall House Nomination to the National Register of Historic Places: This nomination data provides indepth research into the McCall House and family history. It also provides photographs of the house as well as maps of the homestead. There is some information concerning previous houses on this property. This house was located near Coal Valley in Boone County and it was hoped that placement on the National Register might save it. However, it was determined to be ineligible and was subsequently torn down to make way for the Saylorville reservoir.

3) Jim Jacobsen of the Site Inventory Department is currently compiling information on mills throughout the entire state, and he has some information pertaining to Boone County mills.

4) Saylorville Historic District, 1975, Determination of Eligibility.

5) Central Iowa Regional Association of Local Governments (CIRALG) -- This group has compiled a survey of the general history of the localities in central Iowa. This includes Boone, Polk and Dallas counties and it provides base-line information which can also be found elsewhere. It is an unpublished manuscript entitled Historical Summaries of CIRALG Counties compiled in 1981 and is on file in this office.

Iowa Genealogical Society Library, Des Moines

This research library is open to the public and it contains census, marriage, cemetery and military records on microfilm. It is located in Suite 140, 6000 Douglas Avenue.

State Archives of Iowa, Des Moines

Unfortunately this repository has no general index system, therefore requests must be made to archives personnel about specific areas or subjects which they then check for possible materials in storage. There are available on microfilm, and readily accessible, the following items:

Original Land Survey Plats, Original Land Tract Plats, Original Land Survey Field Notes, Township Line Plats, Sanborn Maps-cities and towns, Fire Insurance Maps, Andrea's 1875 Atlas maps for Iowa.

Other items of note which must be requested are the Land Tract Books, Land Patent Record, Annual Reports of County School Superintendents (1860s-1960s). Original Military Muster Rolls, listing of persons subject to military duty (1860-1916), lists of military issue equipment, Military Reports and Correspondence, and G.A.R. post minutes and roster books. Some naturalization records are also available.

Among a collection of Iowa Governors' papers is a small box with correspondence and miscellaneous papers pertaining to the Des Moines River improvement and Land Grant controversy. This dates from 1846-1904 and includes correspondence from the various governors who served during this time period. The file for 1872 includes some land claim questions concerning individuals in Swede Point and Boonsboro.

There is also a large collection of materials pertaining to the Des Moines River Lands which had been amassed by the Iowa Secretary of State's office. There is a rough index for this; however, the storage system has since been changed, and materials are difficult to locate and some may be lost. This collection includes the following: newspaper articles, correspondence, contracts, reports, land abstracts, plats-one is of the tracts above the Raccoon Forks, land claims, original lists of land tracts, land patents, certificates and affidavits

Erickson Library, Boone, Iowa

This is a public library where most materials can be checked out. Some reference material which is stored in the office can be used on request but only in the library.

There is a special room set aside for history and genealogical research and this is called the "Iowa Room." This special section contains books dealing with local and state history as well as genealogical references to aid in family history research.

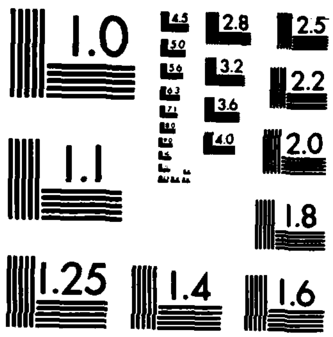
The 1914 Boone County history book by Nathan Goldthwait, along with some plat books (excluding the 1896 Boone County Plat Book) are kept in the library office and have to be requested.

There are some references that can be only found in this library and these include the following: Early Boone County Settlers by Eleanor S. Filena of Des Moines, Iowa (n.d.). This is a typewritten bound manuscript and it can be found in the Iowa Room of this library. This compilation provides an alphabetical listing by family name (primarily) of early settlers in Boone County. The information provided includes:

1) a listing of the early settlers of Cass Township and what year they settled in the area.
2) first land purchases
3) first marriage

AD-A162 959 INTERPRETIVE OVERVIEW OF CULTURAL RESOURCES IN SAYLORVILLE LAKE IOWA VOLUME 1(U) SOUTHWEST MISSOURI STATE UNIV SPRINGFIELD CENTER FOR ARCHAEOL 4/4

UNCLASSIFIED D W BENN ET AL SEP 85 DACW25-84-C-0035 F/G 5/6 NL


1.0
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4) a listing of early teachers
5) a listing of early church members (Liberty Methodist)
6) a listing of G.A.R. veterans
7) Some census listings for Marcy Township, Des Moines Township and Cass Township
8) Jonathan Boles and family listed and a brief biography provided. He operated the Elk Rapids Gristmill and married W. Montgomery McCall's daughter--Margaret. pp. 73-74, 88
9) Warrren M. McCall also discussed and he too once resided in Elk Rapids
10) First schoolhouse, on Honey Creek in 1849, p. 81
11) Rose Family, p. 89
12) McCall family marriages, p.84-85.
13) Boone County marriages listed on p. 142

This reference covers other families that may be useful for future study. It is somewhat problematical in that it is difficult to follow in places and the data is usually not referenced. Therefore caution should be taken in using this information without corroborating sources.

<u>Boone County History</u> by Frances Hurst

This is also a typewritten manuscript kept in a folder in the library office and it must be requested. This history is not dated but it is indexed and has a table of contents. This is also should be utilized in conjunction with better documented sources. Information found in this report includes the following:

1) township histories: when organized, first settlers.
2) early industries, pp. 10-12.
3) Western Stage Company, p. 12, 133.
4) railroad, schools, pp. 12-13, 128.
5) the Elk Rapids mill, p. 22.
6) first coal mine, p. 33.
7) early county schools, pp. 114-119.
8) listing of Civil War companies, p. 120.
9) Logansport, p. 153.
10) Kate Shelly, map of her homestead, p. 193.
11) Charles Gaston, first settler, p 251.

The Erickson Library also has a vertical file of miscellaneous articles and pamphlets listed by subject concerning local and county history. Also available are cemetery records including the compilation of the Liberty (Eversoll) Cemetery in Cass Township for the years spanning 1866 to 1883. This was compiled by Faye Noland for the Boone County Genealogical Society in 1981.

Census records from 1850-on for Boone County are available, as well as county marriage records for 1848-1893. There are historical records on file for the Christian Church in Boone County and some of the early local newspapers are stored on microfilm and can be viewed upon request. These include the <u>Boone-News Republic</u> & <u>Boone County Democrat</u> from 1868-1887, and the <u>Boone County Advocate</u> from 1866-1873 excluding 1870-1872, and the Boone County Index from 1866-1867.

Madrid Public Library, Madrid, Iowa

This public library is located next to the Madrid Historical Museum and most materials can be checked out. Special references which can be found in this library include the following:

1) The Early History of Madrid by Miss Esther Sundberg, 1979. This is a typewritten manuscript kept in a folder in this library. Basically the information is the same as that found in the county history books (Boone County); however, there are some personal remembrances of Esther Sundberg in this text. For example, in describing Elk Rapids and the fact that it once had three stores she writes, "I can barely remember seeing the three store buildings standing in a row..." and also that "...the initial piece of ground settled by (Charles) Gaston was along the Des Moines River, where the Art Whitmore farm is located."

If Miss Sundberg is still alive she could possibly provide a wealth of oral information about local history and site locations.

2) The year leading up to the Madrid Centennial celebration saw the Madrid Register-News publish a series entitled "Remembrances of Days Gone By." This series consisted of articles concerning local history and it was published in 1975. These articles are compiled in a notebook located in this library and they include the following:

   "How Madrid Was Named"-early history of Swede Point.

   "Boone County Coal Mining Began in Early 1800s discusses history of local coal mining, how done, where shipped, and a list of past coal companies in Boone County.

   "History of Elk Rapids"-history same as found in county history books and other sources. Does, however, have photos of Boles Mill (which was later moved into Madrid), the Elk Rapids schoolhouse, Charles W. Gaston, and Benjamin Williams.

   "Riverland Court Decision Caused Great Trouble"-- discusses the Des Moines River improvement scandal, especially concerning the settement between the State and the Des Moines River Navigation Company in 1858.

3) Some issues of Trail Tales are also available as well as collections of The Iowan, Palimpsest and the Annals of Iowa, all of which are indexed.

Mamie Eisenhower Birthplace, Boone, Iowa

This historic site houses a museum, primarily concerning Mamie Eisenhower's life, and a library containing general history books. This library is open to public use but materials cannot be checked out. Mr. Larry Adams is curator of the museum and library and is himself very knowledgeable about Boone County history. This library contains the following references:

1) Boone County Farm Plat, 1983. This book has a listing of all Boone County cemeteries and their locations on p. 17.

2) Graves Registration, WPA

3) Liberty (Eversoll) Cemetery 1866-1883, compiled by Faye Noland in 1981. This is available for reading or it can be purchased.

4) 1896 Boone County Plat Book.

5) Dorothy Schwieder's book Black Diamonds: Life and Work in Iowa's Coal Mining Communities 1895-1925, 1983, Iowa State University Press, Ames, is also available for purchase or reading in the library. This book includes information and photos about the High Bridge Coal Camp on pp. 73-74, as well as statistics and general history concerning coal mining in Iowa.

6) Through the Years, Woodward, Iowa Centennial 1883-1983. Woodward Centennial Committee, Graphic Publishing Company. Can be read in library or purchased. This book contains information about Xenia in Des Moines Township, Dallas County on pp. 11-12 and 13-15. Bole's mill in Elk Rapids is mentioned on p. 15, and Liberty Methodist Church (one of the first churches in this area) is discussed on pp. 41-42. Coal Mines and mining towns are described on pp. 48-51. This concerns Scandia and Phildia and includes photographs of these mines. "Century Farms" in the Woodward area are described pp. 115-122, and local family histories with photos are given on pp. 145-375.

7) A Proud Community, Madrid, Iowa Centennial 1883-1983. (No publisher listed) Available for reading or purchase. Both this book and the above Woodward Centennial book can also be found in the Historical Library in Des Moines.

This reference contains information concerning the early history of Swede Point and Elk Rapids, on pp. 1-15. Specific information on Charles Gaston can be found on pp. 3-5 and p. 388-389 and a photo of his cabin is on p. 4.

Local cemeteries are described on pp. 75-77. The railroads are on pp. 109-117 with a map on p. 116 which shows the early railroad lines, coal mines and towns. Coal mining is discussed on pp. 121-132 including photos of the mines and miners of the Scandia, Phildia and High Bridge coal towns.

The Des Moines River Land Grant scandal is discussed on pp. 304-305 especially as to how it affected development in this area. This is included in a section entitled "Reflections on a Century" (pp. 301-318) which contains some valuable insights into the historical growth and development of this region.

Early doctors in Elk Rapids, Swede Point and later Madrid are listed on pp. 212-214. Other sections concern the churches, schools, agriculture and businesses of the past and present. Of special interest is the section providing local family histories and photographs (pp. 321-518). Included in this section are biographies of Charles Gaston, the Dalander family, and Benjamin Williams, all of whom figured prominently in the early settlement of this area.

Leonard A. Good Community Library, Ogden, Iowa

This is a public library where materials can be checked out. General history and Boone County history books are available as well as the 1850 Census of Boone County and County Plat Maps dating back to 1902.

A special reference that can be found in this library is a copy of The Ogden Reporter Centennial Edition 1866-1966 . Of interest in this edition is an article entitled "Black Gold--Coal" which primarily concerns the coal mines once located in the Ogden vicinity. This includes some discussion of the coal mine at Incline and a photograph of the Ogden mine.

Polk City Community Library, Polk City

This small public library contains a few references of note and these include the following:

1) Bridging the Past with the Future, Polk City Centennial, 1875-1975. Big Creek Publishing Company. This contains descriptions of the Big Creek Community (early Polk City) and the early settlers. Included is a listing of early settlers in this area, the early mills, roads, stage route, and railroads. A section also provides local family histories.

2) A scrapbook of obituaries of area citizens is kept in a box behind the librarian's desk and is available for viewing upon request. There are also several newspaper articles concerning the area in this box, and one shows a photo of the old Corydon Bridge. The caption notes that this was once the site of the Corydon Ferry near the now extinct town of Corydon. Another article is entitled "Albright Farm was Site for Old Stage Line."

Iowa State University, Ames, Iowa

The archaeology division of the Anthropology Department is the repository of the data and artifacts from the past survey and testing projects conducted by I.S.U. in Saylorville Lake. The artifacts are catalogued, inventoried and stored in the archaeology division and can be viewed on advance request. Specific site information in the form of field records, maps and reports are also available.

The University Library contains county history books, as well as complete collections of the Palimpsest, Annals of Iowa and the Iowa Journal of History and Politics. It also has census records on microfilm for the following years: 1840-1880 and 1900-1910. Special references of note are contained in Master Theses written by past I.S.U. students which are available in this library. These include the following:

1) "The Stoneware Industry at Moingona, Iowa: An Archaeological and Historical Study of the Moingona Pottery Works (13BN120) and Flint Stone Pottery (13BN132)," by Allen Schroeder, 1979.

   This is an excellent reference concerning Moingona history and the pottery industry in this region. Figure 2 presents a listing of Boone

County potteries, and grist and saw mills are discussed on p. 12. Chapter 3 concerns the settlement of Moingona (pp. 23-26), its early history, businesses and settlers. Chapter 4 discusses the ceramic industry (pp. 27-61) and gives a chronology of the Moingona potteries on p. 28. Chapter 5 describes the archaeological investigations of 13BN120 and 132 (pp.84-156). It should be noted that the non-kiln artifacts from these sites were not analyzed (p.155). Chapter 6 describes the G. W. Chandler Collection (1858-1904) which consists of archival and artifactual data pertaining to Chandler's pottery works in Moingona. This collection is in the possession of Mrs. Eloise Anderson (Chandler's daughter), 1234 E. 13th St., Des Moines, Iowa. Chapter 7 includes a good discussion of the general decline of the pottery industry (pp. 172-176a) providing insights into the decline of the industry in this area. Plate #1 is a photograph of the Moingona Pottery Works. It is also noted in this thesis that the past Minutes of the Moingona Town Council are in the possession of Mrs. Olive Kennedy of Moingona.

2) "The 19th Century Ceramic Industry at Coal Valley: Archaeology of 13BN111 (Noah Creek Kiln)," by Barbara Schulte, Iowa State University, Ames. 1974.

This reference provides a history of Coal Valley in Chapter 3, pp. 25-28. This includes an interview with Mr. James C. Meehan who was born in Coal Valley, which provides some personal recollections of this community. A discussion of economy and subsistence of this region is contained on pp. 29-34 and this includes information pertaining to the development of coal mining in the area. Chapter 4 concerns the ceramic industry in Boone County, pp. 34-39. This includes discussion of Boone and Boonsboro potteries and brickyards, as well as those in Moingona and Coal Valley. Chapter 5 describes the archaeological investigation of the Noah Creek Kiln (13BN111). Chapter 6 provides a discussion of the technology of this kiln and Chapter 7 consists of conclusions. On page 145 there is a discussion of the ceramic industry in the Des Moines River Valley.

3) "Coalport and its Relationship to the Early Pottery Industry in the Des Moines River Valley," by John Reynolds, 1970.

This thesis concerns two sites in Marion County, Iowa (13MA103 and 106) which is in the Red Rock Reservoir southeast of Des Moines. The settlement and history of Marion County and Coalport is provided on pp. 23-52. Also included in this thesis is a description of the archaeological investigations of 13MA103--Coalport Kiln and 13MA106--Coalport Bottoms. A list of eight pottery kilns in the Des Moines River Valley is given on p. 206. This thesis is valuable for comparative information concerning the pottery industry in this region.

4) "History of the Iowa Coal Industry," by M. G. Stahlman, 1938.

This thesis discusses coal mining in Boone and Polk Counties on pp. 8-9, as well as providing general statistics on production and employment in the Iowa coal industry.

5) "Economic and Social Conditions in Iowa up to 1880," by Jennie L. Harding, 1942.

This thesis provides general economic information concerning the early market system, population settlement, agriculture, religion and education. For example, on page 25 it is noted that in 1854, C. L. Lucus and his father hauled goods from the Mississippi River towns to merchants in Boone County. This was a 400 mile trip which took either 20 days with ox teams or 15 days with horses. For this they charged $2.50 for each 100 pounds of goods.

Courthouses

All three county courthouses in the project area have had inventories made of their records. Boone County has been recently inventoried in 1979, but Dallas and Polk County were inventoried only during the late 1930s-early 1940s as part of the Historical Records Survey, a WPA project.

The Boone County inventory is entitled Inventory Guide to Boone County Records, 1979, Mark A. Jones, editor and published by the Iowa State Historical Department, Iowa City. This is part of the County Records Project wherein the attempt is being made to inventory all Iowa county courthouse repositories with historical research in mind.

This reference includes an introduction which provides some helpful clues for historic research by specifying which records provide what type of information. Records are listed in this reference as to where located, whether indexed, number of volumes, and date ranges available. Records of specific interest to future research include the following:

> Plat maps, transfer records—land and town lot, surveyors records, probate records, wills, road petitions, mortgages, liquor permits, naturalization records, physicians register, birth register, death register, divorce records, marriage records, census listings, deed records—land and town lot, original land entry records, aerial photos, geological survey maps, tax records and school records.

Inventory of the County Archives of Iowa: No. 77, Polk County, Historical Records Survey, WPA, 1942, Des Moines, Iowa.

This reference inventories county records by the courthouse office or department in which they can be found. Pages 1-31 provide an historical sketch of Polk County discussing early settlements, coal mining, mills, agricultural statistics and transportation. Records of interest to future researchers which are listed in this reference include the following:

> Board of Supervisors minutes, school records, road records, land and town lot transfer books, plat books, original entry records, deed records—land and town lot, tax records, mortgage records, chattel mortgage records, physicians register, probate register, wills, naturalization records, birth register, death register, marriage register and surveyors records.

County Engineer Surveyors Record, 1856-1934.

This inventory is indexed by subject, and where date ranges are listed as "present" this indicates up to 1942. Some records probably extend to the present day.

Presently there are records on microfilm in the Polk County Courthouse which are open for public use. These include the following: Record of Administrators and Guardians, Birth Records, Death Records, Land Records, Marriage Register, Naturalization Records, Probate Register of Heirs, Will Records. These are to facilitate historical and genealogical research and serve as a valuable and time-saving tool.

Inventory of the County Archives of Iowa: No. 25, Dallas County, Historical Records Survey, WPA, 1938, Des Moines, Iowa.

This inventory also contains a historical sketch of Dallas County on pages 1-9. The records are indexed chronologically and by subject. Once again the use of "present" here is actually as of 1938; however, most of these likely extend to 1984. Specific records listed in this reference include the following:

> Board of Supervisors minutes, land and town lot transfer books, plat books, surveyors records, military lists, original entry book land and town lot deeds, mortgage and chattel mortgage records, physician register, probate records, wills, naturalization records, birth register, death register, marriage register, tax lists, school records and road records.

Other possible repositories of information are discussed below. These are provided as a listing of potential contacts for future study. They were not contacted during this assessment due to time limitations and due to the fact that they will be more helpful when asked about specific information (i.e., people, towns, dates, etc.).

Historical Societies:

1) Madrid Historical Society, Madrid, Iowa. This group operates a museum housed in the old bank building in downtown Madrid. Audry McVey lives above the museum and is very knowledgeable about local and county history.

2) Boone County Historical Society, Boone, Iowa. This group publishes the Trail Tales. Larry Adams, curator of the Mamie Eisenhower Birthplace Museum in Boone, is extremely helpful and a good source for information about local and county history.

3) Boone County Genealogical Society, Boone, Iowa. This group has compiled several references of interest such as cemetery and census records which have been listed previously in this report. Larry Adams is the correspondence secretary.

4) Dallas County Historical Society, Adel, Iowa. They publish a newsletter.

5) Polk County Historical Society, Des Moines, Iowa. This group also publishes a newsletter and other references already listed in this report. LeRoy G. Pratt, 317 SW 42nd Street, Des Moines, Iowa 50312 is a longtime member of this society, and he has been responsible for the publication of several reference guides to historic sites, courthouses, and historical societies in the state of Iowa. Addresses for the latter can be found in his reference guide entitled: Discovering Historic Iowa: Bicentennial Edition 1975 by LeRoy G. Pratt. Iowa Department of Public Instruction. Des Moines, Iowa.

Museums in the area which may be of interest to this project include the following:

Historical Museum, Des Moines. This is housed in the Historical Building and contains general items pertaining to Iowa history. Of specific interest to this project is the collection of artifacts excavated in the early 1900s from the Boone Mound.

Madrid Historical Museum, Madrid. This is open only on Wednesdays and Fridays, Spring-Fall or by appointment. It is very small but it does contain a few items from the early settlement of this area--Swede Point and Elk Rapids.

ANNOTATED BIBLIOGRAPHY

Theses

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1967 Recreational Analysis of the Des Moines River from Fort Dodge to Madrid. Iowa State University, Ames.
[Coal mining towns of Boone, Moingona and Madrid are mentioned on p. 19; general listing of historical sites that should be preserved in the Des Moines River area--the archaeological sites are from ISU survey data]

Smith, Klarize Mae.
1942 The Economic and Social Development of Iowa from 1860 to 1870. Iowa State University Press, Ames. [General reference on trends in Iowa development, transportation, markets and business.]

County and Local History References

Andrews, L. F.
1908 Pioneers of Polk County, Iowa, and Reminiscences of Early Days, Vols. 1 and 2. Des Moines: Baker Trisler Co. [Brief biographical sketches of Polk County pioneers]

Boone-Supplement to News-Republican 21st Anniversary Edition.
1910 Available at the Erickson Library in Boone, Iowa, and the Madrid Public Library. [Contains an article on the Boone Brick, Tile and Paving Company which was incorporated in 1901, includes photos of Brickyard and the clay pits near the river]

Brainard, John M.
1896 Opening an Iowa County. Annals of Iowa 2(4):260-77. [Boone County history: a sawmill and two grain mills in Boonsboro in 1855 mentioned on p. 262]

Brown, Mabel N.
1971 Moingona--A Rich Historical Past. In The Ogden Reporter, Wednesday, June 9th.

Clarke, S. J. Publishing Co.
1902 A Biographical Record of Boone County, Iowa. New York and Chicago. [Biographical sketches of prominent Boone County citizens--Wm. McCall on pp. 294-5]

Dixon, J. M.
1876 Centennial History of Polk County. State Register, Des Moines. [Township histories on pp. 51-89; Corydon described on p. 73; Western Stage Company on pp. 263-265]

Johnson, Brigham
1911 History of Des Moines and Polk County, Iowa. Vol. 1 and 2. S. J. Clarke Pub. Co., N.Y. and Chicago. [Vol. 2 contains biographical sketches]

Lake City Publishing Co.
1890 Portrait and Biographical Album of Polk County, Iowa. Chicago

Porter, Will
1898 Annals of Polk County, Iowa and the City of Des Moines. George A. Miller Printing Co., Des Moines. [Township histories on pp. 652-657; Polk County towns pp. 879-892; Coal mining history on pp. 901-902]

Sanford, Mrs. N.
1874 Pioneer Life in Iowa, Early Sketches of Polk County, Iowa from 1842-1860. Chas. A. Clark Book and Job Printer, Newton, Iowa.

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1979 The Dalander Colony at Swede Point, Iowa. In Swedish Pioneer Historical Quarterly 30: 162-171.

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1980 Pioneer Homes at Swede Point, Iowa. Vol. 31, No. 1, pp. 12-15.

1981 The Dalander Cemetery, Madrid, Iowa. Vol. 32, No. 1, p. 81.

General History References

Andreas, A. T.
1875 Illustrated Historical Atlas of the State of Iowa. Andreas Atlas Co., Chicago. [County maps in 1875 as well as parton and business directories for each county]

Annals of Iowa.
1863-
present [Contain articles pertaining to varying aspects of Iowa history; general Iowa historical references and all volumes are indexed and available at most sizeable libraries]

Bataille, Gretchen, Gradwohl and Silte, editors.
1978 Worlds Between Two Rivers: Perspective in American Indians in Iowa. Iowa State University Press, Ames. [Most helpful chapter is #14 by Bataille which is a selected bibliography pertaining to the American Indian in Iowa]

Dwelle, Jessie.
1958 Iowa, Beautiful Land: A History of Iowa. Klipto Loose Leaf Co., Mason City, Iowa.

Flom, George T.
1905 The Early Swedish Immigration to Iowa. In Iowa Journal of History and Politics 3: 583-615.

Johnson, Eldon, editor.
1974 Aspects of Upper Great Lakes Anthropology: Papers in Honor of Lloyd A. Wilford. Minnesota Historical Society, St. Paul. [Includes section on "Archaeology of the Central Des Moines River Valley" by David Gradwohl]

Kirkpatrick, Inez E.
1975 Stagecoach Trails in Iowa. J-B Publishing Company, Crete, Nebraska.

Mott, D. C.
1930-32 Abandoned Towns, Villages and Post Offices of Iowa. In Annals of Iowa 17(3): 447-465 and 18(3): 42-69. [This lists by county all the extinct towns of Iowa giving a brief description of each]

1976 Ethnohistory: Its Payoffs and Pitfalls for Iowa Archaeologists. In Journal of Iowa Archaeology 23: 1-44.

Nye, Russell G.
1960 Pioneering on Iowa Prairies. The Methodist Church Agency, Iowa Distributor. [Indian Treaty of 1842 is reproduced on pp. 48-56]

Palimpsest
1881-present Published by the State Historical Society of Iowa. [Contains articles pertaining to varying aspects of Iowa history. Also indexed and widely available.]

Peterson, W. J.
1941 Iowa: The Rivers of Her Valleys. State Historical Society of Iowa, Iowa City. [general reference on Des Moines River history, notes on navigation, early history, pp. 117-205]

Schwieder, Dorothy, editor
1973 Patterns and Perspectives in Iowa History. Iowa State University Press, Ames.

Skinner, Alanson
1925 Observations on the Ethnology of the Sauk Indians: Notes on the Material Culture. In Bulletin of the Public Museum of the City of Milwaukee 5(3): 119-180.

Swieringa, Robert P.
1968 Pioneers and Profits: Land Speculation on the Iowa Frontier. Iowa State University Press, Ames. [Iowa settlement patterns on pp. 80-98; Boone County on pp. 95 and 192-196]

Tuttle, Charles R.
1876 An Illustrated History of the State of Iowa. Richard S. Peale and Co., Chicago. [Boone County history on pp. 429-433; Dallas County on pp. 476-478; and Polk County history on pp. 617-622 (mainly pertains to Des Moines)]

Cannon Reservoir Reports:

Bremer, R. G.
1975 Cannon Reservoir area historical study. University of Nebraska, Department of Anthropology, Technical Report No. 75-106.

Mason, Roger D.
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Other Pertinent References:

Conzen, M. P.
1971 Frontier Farming in an Urban Shadow: the influence of Madison's proximity on the agricultural development of Blooming Grove, Wisconsin. The State Historical Society of Wisconsin, Madison.

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1969 A Location Theory for Rural Settlement, Annals of the Association of American Geographers 59: 365-381.

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1966 Building in wood in the eastern U.S.: a time-place perspective. Geographical Review 56: 40-66.

Mitchell, R. D.
1978 The Formation of Early American Cultural regions: an interpretation. In European settlement and development in North America Essays on geographical change in honour and memory of Andrew H. Clark, edited by J. R. Gibson, University of Toronto Press, pp. 66-90.

The following is an assessment of specific references that are listed in this bibliography and elsewhere in this report. These are references which have specific information pertaining to the project area.

Trail Tales published by the Boone County Historical Society.

A review of past copies have revealed the following articles of interest:

Bulletin No. 6, 1971 The Marmon W. Griffee Pottery Works, pp. 8-10.

No. 9, 1972 The Coal Valley School p. 10

No. 12, 1972 Western Stage Company, pp. 5-24.

No. 17, 1974 "History of the Valley" Elk Rapids is described on pp. 17-19, The Cole Family graves are described on p. 20, information pertaining to the stage routes pp. 21-22 and early mills on pp. 23-24.

No. 18, 1974 Stage route pp. 7-11

No. 22, 1975 "Elk Rapids History" pp. 17-20.

No. 23, 1975 "Pioneer Merchants of Boone County" pp. 20-32

No. 26, 1976 County school history--entire issue--includes descriptions and photos.

No. 27, 1976 History of Logansport pp. 1-6, plus a reprint of the Boone Illustrated 1896 which concerns Boone County history.

No. 36, 1980 Coal mining history, photos in back along with a map of the Boone Coal District. This issue also includes a reprint of an article entitled "Coal Mining and Coal Resources in Boone County and Story County" by Michael Madsen. This article provides excellent information on early coal mining in this region and the rise and fall of the coal industry.

No. 38, 1981 Moingona map as it was in the 1890s on p. 4, Kate Shelley homes (original and last homes) — photos p. 15.

No. 39-40, 1981 Early Mills in Boone County, a photo of Bole's Mill in Elk Rapids after it had been moved to Madrid is included.

The Trail Tales provides some interesting information; however, caution must be taken as the data is rarely referenced and may be of questionable origin. It is most useful for the photos that are reprinted as well as the articles, such as Madsen's on coal mining, which are scholarly works and serve as important references for the history of this area.

General history references of note include:

History of Iowa by Benjamin Gue, 1903. Volume 1 - Pioneer Period. This concerns early Indian occupations and pioneers. Volume II - Civil War. Volume III - 1866-1903: Boone County history pp. 311-313; Dallas County history pp. 337-338; Polk County history pp. 401-402. Volume IV - Iowa Biography: brief biographies of prominent Iowans.

A Glimpse of Iowa in 1846 by J. B. Newhall, 1846. Fort Des Moines is described on p. 46. Statistics and prices for 1846 given on p. 47 including the number of persons who paid poll tax, prices of foodstuffs, etc. County directory listing county officials in 1846 is on p. 48.

Iowa as it is in 1855 by Nathan H. Parker, 1855. Coal resources in Iowa pp. 38-43. Boone County description in 1855 on pp. 112-115, mentions Boonsboro and the mill at Elk Rapids. Dallas County description p. 122. Polk County description p. 163. Location of churches in 1855 on pp. 253-264. This reference is one of the many handbooks on Iowa written for immigrants in the hopes of guiding people into these areas. This is a good reference for

understanding this frontier area from the perspective of early settlement preferences.

History of Medicine in Boone County by Wallace Longworth, 1971. This reference discusses the general history of Boone County on pp. 5-8 in terms of key years and decades. For example, 1846 is singled out because it was in that year that Boone County was first settled. There is mention of early settlers, settlements, Fort Des Moines, county organization, immigration, the depression of 1857, the Civil War and railroads.

The remainder of this book focuses upon the development of the medical profession in Boone County. Early doctors are listed and brief biographical sketches are given. Of specific note is the mention of Dr. J. F. Rice, one of the first doctors in Boone County, who began his practice in Elk Rapids in 1849 or 1850. He moved to Boonsboro in 1851 and was still practicing by 1864 (p. 52).

Stagecoach Trails in Iowa by Inez Kirkpatrick, 1975. This reference is valuable for its compilation of information pertaining to this subject and for the map that is provided on p. 130, which shows the stagecoach trails in the project area as well as pinpointing the early towns in relation to the trails. However, caution should be taken in utilizing this map as the town locations are not highly accurate.

It also gives a history of the Western Stage Company on p. 78, as well as a description of the lines and stops in Boone County on pp. 134-137. Stage lines in Dallas and Polk Counties are described on pp. 140-143, and lists of the mail contracts on pp. 151-153.

A History of the Pioneer Era on the Iowa Prairies by Julian E. McFarland, 1969. Pages 107-113 describe the early trails, traces and roads of this region providing an excellent description of what early transportation systems were like and how they developed. Map VIII illustrates the early roads, towns and mills on the Des Moines River. This map is a handy reference for the location of these early mill sites and extinct towns, such as Elk Rapids and Corydon, in relation to the early transportation system and appears to be accurate in pinpointing locations.

Elk Rapids and Swede Point are mentioned on p. 109. There is also a section specifically on the early water mills in central Iowa on pp. 113-118. Mills are described at Corydon, Elk Rapids and on Big Creek.

Chapter 5 discusses new towns on the prairie. Swede Point, Boonsboro, Parkersburg, Ridgeport, Corydon and Montacute are mentioned on pp. 121-122.

Notable references specific to the individual county histories which are of value are assessed below.

The History of Boone County 1880 by the Union Historical Co.

Early Indian affairs are discussed on pp. 271-293 and is basically the same narrative as that in the Polk County history published by the same company in 1880. Charles W. Gaston, first settler in Boone County, is mentioned on pp. 298-299. Other early Euro-American settlers are mentioned on pp. 306-320

providing information on individuals such as John Pea (Pea's Point), Benjamin Williams (Elk Rapids), Anna Dalander (Swede Point) and Montgomery McCall (near Boonsboro).

The Western Stage Company and its route through this area is described on pp. 337-338, and the early railroads on pp. 407-412. The first schoolhouse and teacher can be located on page 432, and the schoolhouse structure is described in detail.

Coal mines in Boone County are all listed and described on pp. 454-460 providing a useful research aid.

Land grants that greatly affected the development of Boone County are discusssed in detail on pp. 460-474. Specifically, this includes the Des Moines River Land Grant and its ensuing controversy as well as the Swamp Land Grant.

The individual townships, cities and towns are described as to their configuration and histories on pp. 498-554. Yell Township can be found on pp. 527-535, Marcy Township on pp. 535-537 (Coal Valley and Moingona are described), Cass township on pp. 541-542, Worth Township on pp. 547-549, Des Moines Township on pp. 429-527 (Boonsboro and Boone described), and Douglas Township on pp. 549-550 (Elk Rapids and Swede Point described).

The final section presents brief biographies of prominent Boone County individuals and these are listed by township and cover pp. 555-680. Benjamin Williams can be found on p. 616.

This reference, like that of Polk County (1880) and Dallas County (1879), were compiled by a publishing company (Union Historical, Des Moines), and all repeat information found in the other. There is a wealth of early historical information in these books as they were written not long after many of these events occurred; however, like any early history book they can be distorted and colored by local folklore and hearsay information. Specific data should be corroborated where possible before use.

History of Boone County by Nathan Goldthwait, 1914. This reference comes in two volumes. Volume I provides the historical background, and Volume II presents biographical sketches of prominent Boone County individuals.

In Volume I the section describing the early history of the county is practically verbatum from the 1880 history. Little new information is provided.

The Des Moines Navigation and RR Company is discussed on pp. 135-143, and this information is of value as it gives the perspective of the controversy's entire history. The legal troubles were still not resolved totally by 1880 when the first county history was written.

Yell Township history is presented on pp. 197-208, and the coal shaft at Incline is mentioned on p. 201.

Douglas Township is found on pp. 225-249 and contains a longer description of Elk Rapids and its early settlers than found in the 1880 history.

Cass Township is described on pp. 251-258, Worth Township on pp. 259-274, and Macry Township on pp. 281-284 (Moingona and Coal Valley mentioned).

The Western Stage Company can be found on p. 404, and the railroads are discussed on pp. 405-415.

Volume II contains a biographical sketch of Benjamin Williams on p. 278. The volume which is located in the Historical Library actually contains newspaper clippings which have been attached in places throughout this book. Of special interest is a clipping found attached to p. 281 dated August 8, 1912 from the Woodward Enterprise. This article concerns the Elk Rapids cemetery and mentions Benjamin Williams and his wife (who was the first burial there). It also provides a listing of other individuals buried in this cemetery: Judge Montgomery McCall, Joseph Berico, John and Albert Williams, Joshua Wheeler, L. L. Wheeler, and three Civil War soldiers--Isaac Hughes, Robert Robison, and John Gulick. This is potentially valuable data as some of these names were not among those known for the 1972 relocation of this cemetery. There are some errors in this listing, however, as Joseph Berico is actually spelled Bernico and Albert Williams is actually Alfred Williams.

Another pertinant clipping can be found attached to the back page of this particular volume and it is entitled "First Settler An Adventurer," dated June 17, 1937 is from the Madrid Register-News. This article is about Charles W. Gaston and provides basically the same information which can be found elsewhere.

The History of Polk County 1880 by the Union Historical Co.

The sections in this book dealing with the early history of this region is much the same as that found in the Boone County 1880 history book. A description of Benjamin Williams' early encounters with Pottawatomies and their maple sugar operations near Elk Rapids can be found on pp. 290-291.

The early settlements on Big Creek and later at Polk City are described on pp. 344-345. Corydon and Montacute are mentioned on pp. 345-346, and early mills are discussed on pp. 346 and 369-370.

Western Stage Company lines are described on pp. 384 and 387. The first land entries in Polk County are listed on pp. 399-406. The vote of 1850 is listed on p. 487, vote of 1852 on p. 489, vote of 1855 and 1857 on pp. 490-492.

Early railroads are described on p. 633 and township histories can be found on pp. 619-760. Specifically, Madison Township is on pp. 632-635 (Montacute, Corydon and New Corydon are described), Jefferson Township on pp. 636-638 [Andrews (Dog Town) is described], Crocker Township on pp. 638-639, Saylor Township on pp. 645-647, Valley Township pp. 651-652, and Des Moines Township. Township biographical sketches of prominent individuals can be found on pp. 761-1037.

Even though this reference is often repetitive of other sources it does provide valuable information specific to the project area especially concerning extinct towns such as Corydon and Montacute. Information is also provided pertaining to early settlement patterns (e.g. pp. 262, 265, 320) and development (eg. pp. 416, 536).

History of Des Moines and Polk County, Iowa 1911 by Johnson Bringham.

This reference is contained in two volumes. The first volume consists of general historical information about Polk County and the City of Des Moines. The second volume presents biographical sketches of prominent Polk County individuals.

Volume I specifically contains the following information of interest to this project:

The early stagecoach lines and Fort Des Moines are described on pp. 118-121. The history of Polk County is contained primarily on pp. 643-746 as the rest of this volume is devoted primarily to the history of the city of Des Moines.

There is a listing of the heads of the first families to settle in Polk County, and the number in each family, on pp. 671-672. Early roads are described on pp. 668-670; sawmills in 1850 on pp. 671-672 (this is the same list found in other county histories in this region); a brief description of the rivers and creeks in Polk County on pp. 673-674; and early settlements (such as Big Creek) on pp. 675-679.

The most valuable section of this book is that describing the evolutionary history of Polk County from 1850-1910. This can be found on pp. 731-746, and is traced by use of census information. This discussion is an important aid to understanding the development of this area.

Pioneer Life in Iowa, Early Sketches of Polk County, from 1842-1860 by Mrs. N. Sanford, 1874.

This reference provides some valuable information not found in other sources. For example, chapter 5 mentions that teamsters were used to haul goods and mail before the Western Stage Company existed (p. 34). Also, in chapter 6, it is noted that in 1847 the Des Moines River was high and malaria was a problem in Saylor Township (p. 45).

Chapter 9 describes early towns, and included are descriptions of Montacute (spelled Montacule in this reference), Corydon, and Dogtown (now Andrews). These descriptions include structures that were known to exist in these towns. Chapter 11 provides biographical sketches of pioneers in Polk County.

Highlights of Polk County History 1973 by R. Denny and L. Pratt.

Pages 8-19 provide a listing and description of unincorporated towns and ghost towns of Polk County. A helpful map is provided on page 8 which pinpoints their locations. This list includes Corydon, Montacute, Andrews, Herrold, Lovington, Saylorville, and Crocker.

The History of Dallas County 1879 by the Union Historical Co.

Much of the general history presented in this book is a repetition of that found in the 1880 histories of Boone and Polk Counties. However, some of the information which can be found in this book is useful in terms of this project. On pp. 289-290 the early settlers of Des Moines Township (in the

reservoir area) are listed by name and on what section of land they settled on.

Pages 350-351 describe the Des Moines River floods of 1849 and 1851 noting that the floodwaters reached out in many places to a width of two to four miles.

Early railroads are discussed on pp. 384-389, and Xenia is described on p. 492. The history of Des Moines Township is presented on pp. 515-518, and early settlers, schools, coal mines, and mills are discussed.

An index biography section comprises the final chapter of this book. A sketch of O. D. Smalley, first settler in Des Moines Township, can be found on p. 631, as well as a sketch of William Ruth who had an early mill in Section 3 of this Township. Other Des Moines township biographies can be found on pp. 629-632.

Past and Present of Dallas County 1907 by R. F. Wood.

Coal resources in Dallas County are discussed on p. 74, and early settlements on pp. 76-77. The latter is the same information as that presented in the 1879 county history. The heavy snowfalls of 1848-1849 and 1856-1857, and the floods of 1849 and 1851, are described on p. 84. There were also droughts in 1886 and 1894, and these are described on p. 42.

The history of Des Moines Township is found on pp. 157-161 and Xenia, Ruth's Mill, High Bridge and Scandia are mentioned.

Pages 263-792 present biographical sketches of prominent Dallas County individuals.

Hastie's History of Dallas County 1938 by Eugene N. Hastie.

This is most useful for its section describing Des Moines Township history (pp. 32-34). This mentions the early settlers, Xenia, Ruth's Mill, High Bridge and Scandia. It is most valuable for its descriptions of the last two (High Bridge and Scandia) which were early twentieth century coal mining towns. It had not been long before this book was written that they had ceased to be viable towns.

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